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SUCCESS OF THE STRONG FUEL-GAS IN SWEDEN.

We are pleased to call attention to the very flattering indorsement the Strong fuel-gas process has received in Sweden, a copy of the certificate being published in this number of the JOURNAL. In October last, we noticed the departure of Mr. GEORGE S. DWIGHT, to introduce the process in Europe; the short-sightedness of the gas manufacturers of this country, in placing all sorts of obstacles in his way, making this move a necessity. The results with the Strong process in the experimental works have been so very gratifying that extensive works are now being erected.

END-LINES AND CROSS-VEINS.

The decision of the U. S. Supreme Court in the Flagstaff case, to which we recently alluded, is a direct reversal of the doctrine laid down by Judge MCKEAN, some years ago, in the Emma-Illinois case, in Utah. The Flagstaff being located in the same region, the contrast between the two decisions is all the more striking. Indeed, it is not impossible that the course of the Flagstaff Co., in following its vein *on the strike* outside of its surface-lines, was based on the encouragement afforded by the Emma-Illinois case, in which it was held that the Emma location entitled its locators to a certain number of feet on the course of the "vein or lode," and that, if the patent-survey did not cover that number of feet, they could be taken nevertheless.

Our readers will remember that we vigorously opposed this principle at the time of its utterance, holding that neither the Act of 1866 nor that of 1872 fairly countenanced it. We prophesied that it would be overthrown by the Supreme Court, if it ever reached that tribunal. A compromise between the parties prevented such a review of the Emma-Illinois decision; but the same question has now been settled in a parallel case. Mr. RAYMOND's view of it, as announced editorially and also presented in 1876 before the House Committee examining the Emma Mine case, and still later, in his paper on the Eureka case, is thus confirmed by the highest tribunal.

Before the passage of the Act of 1872, there existed under mining customs a right of "swinging a claim." That is, if a discoverer supposed his vein to run in a certain direction, and located with his associates a series of claims in that direction, and it was afterward discovered that the true course of the vein was in another direction, then the location could be "swung around," so as to cover the vein, and give to the locators the number of feet on its length which they intended to claim. We quote the following defense of this custom from Mr. RAYMOND'S paper on the Eureka case (Trans. Am. Inst. M. E., Vol. VI.):

"The Act of 1866 recognized and confirmed, where it did not overrule, the customs of miners. It was universally the custom of miners on the public domain, to locate and record claims upon discovered lodes by linear feet, measured from the 'discovery-shaft,' the length of each claim, the width of surface-ground controlled as an easement or appurtenance for mining purposes (buildings, roads, dumps, etc.), and the nature of the possessory tenure, being governed by local regulations in each district. Since priority of location and record determined all disputes as to possessory title, it was necessary to make such record as early as possible after discovery, and, therefore, before the true course of the lode could be ascertained. Hence the discoverer, though he usually included in his record a statement as to the course of the lode, might find, upon further developments, that he had been entirely mistaken. To make a new location and record, containing the corrected facts, might involve the sacrifice of precious priority; since in most cases (particularly if the lode was rich) hosts of other claimants would be located in the vicinity, some of them already occupying the ground which the discoverer meant to claim, and to which in equity he was entitled. A striking instance occurred in the case of the famous Eberhardt Mine at White Pine, which was originally supposed (and described in the record) to run east and west, whereas it really ran north and south. Numerous shafts were sunk side by side on alleged parallel veins, which turned out to be all on the course of the Eberhardt. Such complications are apt to be settled in new communities by violence as well as litigation, ending generally in compromise. But it is fair to say that the mining communities, apart from the persons interested in any special case, recognized the right of the earlier locator to 'swing his claim,' that is, to take the full number of linear feet to which he was entitled, without regard to the course described in his original record of location. This is simply an equitable application of the well-known principle of 'the worthier landmark.' If, in a deed of land, the description of the land says that one of its boundary-lines extends from a bend in a creek twenty chains north to a certain rock, and it is subsequently found upon re-survey that the rock (fully identified is thirty chains south of the bend in the creek, the erroneous course and distance given in the deed are disregarded, and the natural objects described, being deemed the worthier landmarks, are permitted to establish the boundary in spite of the literal document. Similarly, when a miner records his claim to a certain number of feet upon a lode which he has discovered at one point only, it is the lode itself which is his landmark; and if, in obedience to a custom intended to assist other miners in recognizing the limits of his claim, he states in the record, as well as he can, the direction in which he supposes its course to lie, he ought not to be cheated out of the reward of his discovery or priority by reason of any inaccuracy in this description.

"But to permit this state of things to continue indefinitely, would be contrary to public policy; and public policy—namely, the public benefit to be derived from the encouragement of mining—is the motive of the Acts of Congress by which the miner upon the public lands has been removed from the relation of a trespasser and created a tenant, with the privilege of becoming a proprietor. In the Act of 1866, the government says substantially to the miner, 'I own this land in which you are digging. I can make what rules I please to control your operations, or eject you altogether. But, for the public good, I will give you the right to occupy, and explore, and mine, and carry away my treasure, and to make what regulations you please to govern your relations to other miners, provided you obey certain conditions which I impose. One of these conditions limits your claim as an individual to two hundred feet as a maximum, and the claim of an association to three thousand feet. If you wish to obtain a title better than this permission, a title which does not depend on local regulations and can not be affected by them, I will sell you a mine outright, provided that after you have done enough work to prove your good faith and define your claim, you will furnish an exact description of it by surface survey, establish your undisputed possession, and pay for it by the acre of surface. The right to follow your vein *in depth*, you shall retain; but you must define the length of your claim, so that your fellow-citizens may know where your property ends, and they may explore or mine, and I may sell without wronging you. You can not 'swing your claim' after it is patented. That privilege belongs necessarily to the period of exploration and mere tenancy. When you come to me for a better-defined title, you must be prepared to abide by the definition.'"

The right to swing even a location, under possessory title, is now perhaps gone. At least, it does not seem to us consistent with the language of the Act of 1872, now in force, as part of the Revised Statutes. We think the restrictions now laid on the miner by the law, as it is construed in the Land Office, are too severe in this respect. But, however that may be, it is clear that the force of the end-lines of a formal survey, constituting the basis for a patent, is absolute, under both the act of 1866 and that of 1872. This has never been doubted for cases where the lode actually runs through the location longitudinally, and crosses at right-angles the end-lines of the survey-parallelogram; but the principle is now applied when the survey is extended longitudinally across, not along, the lode, and the latter intersects the side-lines, not the end-lines. Under such circumstances, the lines of the survey crossed by a lode in its course are for that lode the end-lines of the claim.

The law directs that locations shall be made along the course of the veins, and that the end-lines shall be parallel. It contemplates, as a normal state of things, a parallelogram, inclosing the outcrop of the lode. But it may happen, through accident or design, or by reason of the limits imposed by prior locations, that these conditions are not fulfilled. In the Eureka case, it was held that such a defect did not *per se* void the patent. It is now held, in the Flagstaff case, that the defect must not, on the other hand, be allowed to work a positive advantage to the patentee or locator. He will not lose thereby what his location covers, but he does lose the right to claim more. This is manifestly equitable.

The principles thus defined may be applied to the point raised by Mr. TYLER, in a letter published elsewhere. Our correspondent's wish for an authoritative opinion can not be gratified. Extra-judicial opinions have no other authority than the force of their logic may carry. Only an actual case, involving the principle, can call forth an authoritative deci-

sion, and that decision may be overruled by the same or a higher tribunal afterward. Nevertheless, discussion will do no harm; and we therefore suggest our view of the case as a contribution to such discussion.

Mr. TYLER is, in our judgment, quite right in asserting that the present law gives to a locator the right to the cross-veins within his surface-lines. Assuming, for example, that A is owner of a location running east and west, along a lode, and that his ground is crossed by a lode striking north and south, upon which B has a later location, the length of which is so divided by A's ground that B's ground consists of three parts—one lying within, one south, and one north of A's ground; certainly, in that case, those lines of A which are the side-lines for his main lode become his end-lines for the cross-lode; and all that portion of the cross-lode which lies between vertical planes extended downward through these lines belongs to A, and not to B.

But we think that under the statute B could claim the right of way across A's ground, for the purposes of the convenient working of his mine; and in this particular we consider Mr. TYLER'S construction too narrow, since he would confine such right of way to crossings in the downward course. To them, of course, it applies; and to them the grant of the ore in the space of intersection refers.

There are, however, two other possible applications of these sections in the statute, which our correspondent overlooks. The first is the case of adverse claims existing on the 10th of May, 1872. Supposing, in the case already assumed, that both locations had been made before that date, and neither had been patented, and that upon A's application for patent, B should assert his rights based upon his cross-location. In that event, we think A could only obtain the right to the ore in the actual space of intersection of the two lodes, and B would have not only the right of way, but also the ore in his cross-vein outside of the space of intersection, though within the lines of A. The patent would probably have to be issued with an explicit reservation of that kind in favor of B.

Or if both patents had been issued before 1872, B would have the right referred to, by virtue of Section 2344 of the Revised Statutes, which protects all rights and interests acquired under laws existing when the Act of 1872 was passed. According to a decision of February 25th, 1876, reported in *Copp's Land Owner*, 2 : 178, "where a patent issues for a mining claim which crosses one already patented, the surface ground in conflict is excepted from the second patent, but the subsequent patentee has the right under his patent to his lode for the distance patented, with the proviso that the ore at the space of intersection shall belong to the prior location." We understand this to refer to patents under the Act of 1866, but, not having the full text of the decision at hand, we can not be sure of that point. At all events, it conveys precisely our notion as to the status of a cross-location prior to 1872; but we do not see how it could be applied to interests originating since that time.

NEW PUBLICATIONS.

The Science Index, A Monthly Guide to the Contents of the Scientific Periodicals. Edited by A. HILDEBRANDT, A.I.C.E., etc. Manchester, 1879. 4to, (about) 60 pages. (Vol. I. No. 1, Jan. 1879.)

Certainly no reader of the ENGINEERING AND MINING JOURNAL needs an additional word from us to indicate the value, or rather to enforce the necessity, of good indexes. Indeed, if asked what kind of work requires an index, we should reply by asking what book can dispense with one? To the well-trained and hard-working student of to-day, with so many and such urgent claims upon his time and attention, the absence of a thorough index is almost as capital an offense in a book as would be the omission of title-page or pagination. Especially is this true in works of a scientific character, where a more or less extended discussion is often involved of topics pertinent, but not, at the first glance, obviously suggesting themselves as in strict relation to the main subject, and which therefore require the indication afforded by the guiding, friendly hand of the index.

Equally imperative is the demand for an index to the periodical literature of science; for no sooner is a book of importance produced than it becomes the theme of review and criticism and discussion. Indeed, in many cases, the journals themselves are books in all but the name, besides being a great deal more. Papers read before societies, memoirs, letters, accounts of experiments, corrections, fill their columns, and form in some sense a last word and "sober second thought" up to the moment of going to press. The man of science, therefore, is never fully equipped without the journals; and the journals are never fully themselves without the indexes.

But the reader, well supplied as he may be with books, and subscribing to the periodicals as he must, feels the necessity of surveying the whole field. And here the difficulty confronts him that, supposing his books and journals thoroughly indexed, he even then has access to only a portion of the material he may desire to use. Precisely where the matter necessary to complete his survey may be found, he knows only in a vague way, or knows not at all. He must, then, either fritter away precious time in searching, or be content with half-knowledge, which is often but another name for half-falsehood.

These difficulties, it is claimed, "will be completely removed by *The Science Index*, a Monthly Guide to the English Scientific Periodicals, published as early as practicable in each month, and containing *all the material requisite for easy reference to all articles of scientific or technical interest* which have appeared during the previous month. It will consist of a classified alphabetical list of the titles and authors (if known) of the articles that have appeared in the periodicals, referring to number and page, and this will in some cases be rendered even more complete and useful by an indication of their salient points."

We give a short paragraph, to show the method of treatment thus outlined:

ANTHROPOLOGY.

Achinese, Osteology of. *Skull differs in many important respects from Malay, but agrees with the Dyak.* Memoir. POPLR. SC. RVW., 9, 94.
Evolution of Man and Wisdom Teeth, The. *Wisdom Teeth more frequently wanted in superior than inferior races. Darwin's theory corroborated.* Memoir. POPLR. SC. RVW., 9, 83.
Human Hair, The Color of. *Tint due to presence of pigmentary bodies.* Paper. POP. SC. RVW., 9, 84.

As we may recur to this topic, we at present merely suggest that the titles of the subjects should form a part of the running head over the page, thus greatly facilitating quick reference.

The *Index* is a small quarto, in brevier type (the same as that in which this article appears), and on good, fair paper. Subscription, 20 shillings =$5, per annum, post free to any part of the world. Subscriptions may be addressed to the Scientific Publishing Company, 27 Park Place, P.O. Box 4404, New York City.

PERSONALS.

Our Readers are invited to send us Items for this Column.

We call attention to the card of "Engineer," asking for a partner, capital, or facilities for utilizing important patents for steam-pumps.

Mr. RICHARD P. ROTHWELL, M.E., Managing Editor of the ENGINEERING AND MINING JOURNAL, now making an extended tour through the mining regions of the West, including Montana, will remain at Salt Lake City until the 15th of June. His address will be the Walker House, Salt Lake City, up to that date; but parties desiring his professional services can obtain information at this office, and be put in communication with him by telegraph at any time.

THE STRONG FUEL-GAS IN SWEDEN.

GEORGE S. DWIGHT, ESQ.:

DEAR SIR: A furnace for producing gas through the decomposition of water, according to the Strong method, having been erected by you during the last winter at the Atlas Works, Stockholm, we, the undersigned, declare herewith that the results hitherto obtained in this furnace, and the researches hitherto made with the employment of the gas, fully agree with the statements previously given by you, as well verbally as in a printed pamphlet; and that we are heartily convinced, through the cheapness and usefulness of the gas already experienced, of the large future use of this gas as well for metallurgical and technical as for domestic purposes. Thus we confirm the statement that fuel-gas has been produced in this furnace by employing as well English cokes, coals from Hoganas in Sweden, and anthracite coals from Wales, in the generator, and coal-dust or peat-powder in the hopper; that the composition of the gas, by employing these different fuels, has been exactly the same as shown by the analysis; that the gas has by us been employed for welding wrought-iron, for smelting in crucibles as well pig-iron as steel; that the results of these three different experiments have been very satisfactory as to the heating power of the gas; and that the economical results obtained by these operations, though made on a small scale, are such as to fully satisfy us of the superior economical results that must be obtained when the operations come to be executed on a larger scale in furnaces better adapted to the purpose. Thus we are convinced that this gaseous fuel will be the best, both effectually and economically, for most metallurgical purposes.

On the other hand, we can confirm the statement that the employment of the gas for cooking purposes causes extraordinary saving in the household department, and that the cleanliness and convenience of its use must make it a favorite with all housekeepers. Especially are we indebted to you for the construction of a most ingenious small baking and roasting stove, of the dimensions inside of 18″ + 18″ + 15″, giving, at a gas consumption of only 14 to 15 feet an hour, a constant heat of 275° C. As to the heating of dwellings, we have not yet made any experiments; but we are fully convinced of the usefulness, cleanliness, and cheapness of the gas for this as well as for the above-mentioned purposes.

In reference to the adaptation of the gas for illuminating purposes, we have as yet made only one experiment, by conducting it through a vessel filled with cotton moistened with benzine, and by this simple process we have found the gas acquiring a satisfactory illuminating power.

In testifying our gratitude that you have introduced a method that we are convinced will be most important to our country, at the same time we sincerely acknowledge the expert, straightforward, and gentleman-like manner in which you have conducted the work.

We are, sir, with the highest esteem, yours sincerely,
LUDOVIC NOBEL, of St. Petersburg, Russia.
OTTO TORELL, Director of Geological Survey of Sweden.
C. A. DELWIK, Director of Metallurgic Dep't of Iron and Steel Masters' Association of Sweden.
E. FRANCKEL, Manager of Atlas Works, of Stockholm, Sweden.
ATSELL, Engineer Stockholm Gas-Works.
CARL WITTENSTRÖM, Metallurgical Engineer.

STOCKHOLM, SWEDEN, May 8, 1879.

CROSS-VEINS.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Will you grant me space in your valuable paper for a few words upon a point of mining law, which, it seems to me, is thoroughly misunderstood, not only by our mining public, but, with all due deference be it said, also by our legal interpreters of the acts of Congress. It is of the highest importance to all miners that the point should be definitely settled; the sooner the better.

I quote from the Act of Congress, May 10th, 1872 (Sec. 2322, Rev. Stat.):

"The locators of all mining locations heretofore made, or which shall hereafter be made, * * * where no adverse claim exists, * * * shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes, and ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of such surface location; but their right of possession to such outside parts of such veins and ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as above described through the end-lines of their location, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges; and nothing in this section shall authorize the locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim, to enter upon the surface of a claim owned or possessed by another."

In this section the intent is plain, as upheld in the Eureka-Richmond decision, to give the locator every vein outcropping or heading within the four lines of his location, with the right to follow them *downward* or *on the dip* indefinitely (so long as he keeps inside the vertical end-planes), even into, that is, under, another's location. But laterally, or *on the strike*, the law gives him no rights on, in, or under another's territory. Having granted certain definite things to one person, can even the law grant the same things to a second person? Can it give away or sell to B the identical property just sold to A, without an intermediate confiscation, which is certainly not provided for in the law?

I quote again from the act of May 10th, 1872 (Sec. 2336, Rev. Stat.):

"Where two or more veins intersect or cross each other, priority of title shall govern, and such prior location shall be entitled to all ore or mineral contained within the space of intersection; but the subsequent location shall have the right of way through the space of intersection for the purpose of the convenient working of the mine; and where two or more veins unite, the oldest or prior location shall take the vein below the point of union, including all the space of intersection."

Here we have, according to the common view, a plain contradiction of the section previously quoted. Acting upon the belief that one section of a law is as strong as its neighbor, people take that one for a guide which suits their immediate purpose, and disputes and quarrels wax hot and vast actual mischief results. I need not go into details; it is enough that the issue is a red-hot one to-day here in Colorado. Legal advice is unsatisfactory. Even Morrison (*Mining Rights in Colorado*, page 27) is content to simply characterize the act as "extremely ambiguous."

Now, let us analyze the two quotations, taken together, as parts of one *harmonious*, instead of *contradictory*, whole;

First. There is in the first section quoted a grant, in express terms, to the (prior) locator of *all* (no reservation of "cross" or outside-located) veins, whose origin, at or toward the surface, is within his surface location lines or vertical planes drawn downward through them. And, as the greater includes the less, "all veins" include all "parts of veins" answering to the above description.

Second. There is no grant, in express terms or words, in either section, of a right to follow any vein laterally, *on the strike*, outside of the lines of the location.

Third. There is no grant, in express terms, in either section, of a right to trespass or enter upon or into the territory of another prior location by following a vein on its strike.

Fourth. There is a grant, in express terms, in both sections, of the right to follow a vein having its origin within the lines of the location, on its dip, or downward, outside the vertical side-boundaries of the location, and into and through, if need be, another's location, whether prior or subsequent.

Fifth. There is a grant, in so many words, in the second section quoted, of a right for either party to follow his vein (or any one of the veins belonging to him by virtue of his location) through the vein or veins belonging to the other party (be he prior or subsequent locator), "the ore at the intersection to belong to the prior locator;" and if the two veins unite, the prior location takes the whole "below" the point of union.

Now, it is quite plain (following the exact letter of the law) that there is no contraction, *in express terms*, between the two sections quoted; but only one by implication, arising through careless wording or interpretation of the statute.

If it is once admitted, as the strict letter of the law compels, that the intent of the act granting right of way for one locator through the vein of another was *to limit that grant to crossings in downward progress*, that is, on the dip of the vein, which is the only "crossing" possible under the terms of the first section, then the whole difficulty and apparent contradiction falls to the ground and a rule remains simple and easy of comprehension, even to the ordinary miner.

Inasmuch as any thing which may aid to settle the vexed questions of mining rights or tend to spread a right understanding of the laws by virtue of which we hold our mining property is of importance in these days of great mining movement, I hope you will give place to this discussion of the question of "cross-veins;" and if it shall succeed in drawing the attention of some one of our wise law-givers or expounders to the extent of giving us an authoritative opinion for our guidance, I shall be well satisfied.

Respectfully,
SIDNEY W. TYLER, M.E.

CENTRAL CITY, COLO., April 26, 1879.

AS compared with a year ago, there has been a decline of 10s. in English iron rails, and £1 12s. 6d. in steel rails.

THE second meeting of the International Geological Congress will be held at Bologna, Italy, September 26th, 1881.

TRIANGULATION PROBLEM.

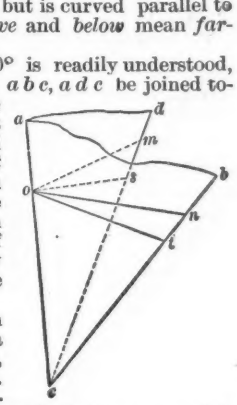
WHY THE THREE ANGLES OF A TRIANGLE ON LEVEL GROUND, WHEN MEASURED HORIZONTALLY AS USUAL, AMOUNT TO MORE THAN 180°.

Written for the Engineering and Mining Journal, by John C. Trautwine, C.E.

Many young engineers, as well as non-professional persons, find it difficult to realize the fact that, if the three angles of a triangle on a levee portion of the surface of the earth, or on the surface of any sphere, are measured horizontally, as is usual, by a transit instrument, compass, etc., they must amount to more than two right angles, or 180°; that is, to more than the three actual angles of the triangle. The fact, it is true, has little or no bearing upon ordinary engineering operations; for if each side of the triangle does not exceed about 50 or 60 miles in length, the excess above 180° (called in spherical trigonometry, "The Spherical Excess") is too small to be detected by the best engineering instruments. With sides even 100 miles long, it would be scarcely one minute in all, or one third of a minute for each angle; and with sides 25 miles long, it would be but a trifle over one second for each angle.

By the expression "level ground," is meant ground which is in every part equally distant from the center of the earth; so that the three points of any triangle on the surface of the earth are said to be on a level with each other when equidistant from said center; and so any points or objects on the surface of the ocean, however far apart, are on a level with each other. A level line is never a straight one, but is curved parallel to the sea surface; and so with level ground. *Above* and *below* mean *farther from* or *nearer to* the center of the earth.

The reason of this spherical excess above 180° is readily understood, and is as follows: If any two plane surfaces, as *a b c*, *a d c* be joined together along any straight line *a c*, then the angle contained between them, and measured at any point *o* in the line *a c*, is that (*m o n*) formed between the two lines *o m* and *o n*, each drawn *at right angles to a c*. This angle is greater than that between any other two lines that can be drawn on the two planes from *o*, provided both lines are either above or below *o m* and *o n*. If one line should be above, and the other below *o m* and *o n*, then the angle between them will be greater than *m o n*.



Now, let any three points, *o*, *s*, *t*, all to be on a level portion of the earth's surface, or at sea level; *c* being the center of the earth; then *c o*, *c t*, *c s*, of course, are all equal radii of the earth. Suppose that with a transit instrument or compass, etc., placed at *o*, we wish to measure the angle between *s* and *t*. Here *t n* and *s m* may represent the usual sight-rod held vertically (that is, in line with the earth's radii *c t*, *c s*) at *t* and *s*. It is plain that in any such case we have two imaginary planes, *o m c* and *o n c*, joined together along the straight line *o c* of a radius of the earth.

To measure the angle, we first level the graduated circle of the instrument at *o*; that is, we bring it into a true horizontal plane, *o m n*, or one at right angles to the radius *o c*, or tangential to the earth's surface at *o*. We then sight along either the horizontal lines *o m*, *o n*, or along *o s*, *o t*, as may be most convenient. In either case, the result is the *horizontal* angle *m o n*, formed between the two planes; for the mere fact of depressing the telescope so as to sight directly upon *s* and *t*, instead of sighting to *m* and *n*, does not affect the measurement of the angle; for that is performed by the horizontal graduated circle, not by the telescope, which only enables us to see the objects more distinctly. Therefore, in either case, we actually measure the angle included between the two horizontal lines *o m*, *o n*, both of which being at right angles to the line *c o* of junction, of course give, as before remarked, the true angle *between the two planes*. But the actual angle *of the three objects s, o, t*, on the earth's level surface, is contained between the two lines *o s*, *o t*, both of which must evidently be below *o m and o n*, which are tangential to the earth's surface at *o*. In other words, any line drawn on any level surface of the earth must be below a tangent to the earth's surface from either end of said line. Consequently the angle *s o t* is less than the horizontal one *m o n*.

Precisely the same thing occurs at the measurement of each of the three angles; for at both *s* and *t* also are two imaginary planes united along the vertical line of a radius (either *c t* or *c s*) of the earth; and at each the horizontal or tangential angle must be above the actual one between objects on the earth's level surface, and consequently is greater than it. Hence, as the actual angles amount to 180°, the three horizontally-measured ones must exceed 180°.

Although in engineering operations this spherical excess is too small to be observed, and is consequently neglected, such is not the case in extensive triangulations, such as the U. S. Coast Survey, in which the utmost attainable precision is required. There the excess must be taken into account as a necessary element in calculating the *curved* distances from place to place as measured on the spherical surface of the earth. The observed objects are of course rarely on a level with each other, or at the level of the sea; but they must always be reduced to this last level by calculation before the correct horizontal angles and the curved distances can be computed by spherical trigonometry. Here the most powerful instruments, capable of reading seconds and fractions of a second, are employed. A second is about 8 inches in 25 miles.

In engineering and surveying practice, the object in always measuring angles horizontally, instead of taking the actual ones, is that we may obtain the horizontal distances between the points, or the horizontal areas embraced between said points when they inclose parcels of ground. By law, the contents of farms must be estimated by this horizontal area; which, moreover, is the only one by which their position can be satisfactorily shown on a map. For suppose a square farm of 1000 feet in length on each boundary-line; and let three of its sides be on dead level ground, while the fourth one is so hilly that, if measured along the slopes, its length would be 1100 feet. It is plain that the surveyor who would measure in this manner could neither make his survey close nor make a map of it. On this principle, our measurements of both distances and angles must be horizontal.

THE UTAH CEROID MINERALS.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As there doubtless are among your readers personal friends who will expect me to defend myself against the imputations of Mr. Newberry, I must ask your further indulgence, as well as that of other readers who may justly deem that topic as already more than used up.

Mr. N., in his communication in your last issue (May 17th), has certainly shown that I have wrongly read and cited one of his experiments, in reference to the *duration* of his ebullition with ether. My objection to his experiment, however, was essentially to the enormous quantity of ether used (500 times the weight of the mineral) rather than to the time of action, which latter is comparatively unimportant. It stands therefore as before (with his correction of my misquotation, which I apologize for). In the same paragraph, moreover, in which he exposes this inadvertence, he commits a far worse similar offense against me, when asserting (*with quotation-marks*) that I speak of "series differing by other increments than CH_2," meaning series of organic homologues. This implies either that he did not read correctly my previous communication, or that he did not gather its meaning, or more probably both.

His objection to my tabulation (see JOURNAL of April 5th, p. 235) of all the analyses of mineral ceroid hydrocarbons, as first correctly computed, I find, does not convey any meaning to my mind. He is mistaken here in his statements of facts. His analysis *does not* "differ by nearly 1½ per cent in the amount of carbon" from the mean of the 14 European analyses cited by me, but only by 0·48 per cent (both being properly reduced to 100 parts). Also, when he says that if his analysis be omitted from the calculation—to which I have no objection—"somewhat different results" will ensue, he is incorrect, if, by "somewhat" he means *appreciably*, as he evidently intends to be understood to mean. Omitting minute fractions, the 15 analyses (including Newberry's) give 85·71 of carbon, while 14 analyses (omitting Newberry's) give 85·68 of carbon. His analysis, therefore, does not appreciably "disturb the harmony of this beautiful and complete demonstration," to adopt the really appropriate phraseology which, aiming at sarcasm, he employs.

The two main points brought forward by me and attacked by Mr. N. were: *First*. The existence of distinctive differences in both physical and chemical characters, separating the Utah hydrocarbons from *ozocerites*, as the latter are defined by Dana. To my arguments and statements of facts under this head, my antagonist has made no reply, and can make none, without ignoring the principle of classification adopted by Dana, and in which I follow him, provisionally at least.

Second. The separation of the native solid ceroid hydrocarbons, as a class, from the paraffine series, and their identification with the olefine series—an observation of my own, of which I have presented already such convincing proof that even my antagonist now virtually concedes it, merely claiming that at the time of his attack on me, published by you March 22d (in which he nevertheless calls them "the natural paraffines"), he had on this question "arrived at conclusions similar to" mine. He satisfies himself with futile attacks on my modes of proof. With regard to his quotation from Schorlemmer, I am at a loss to see how he can expect your chemical readers to accept it as authority for his own astonishing assertion that the action of oil of vitriol, at the temperature of fusion of paraffines, is "the same upon both" paraffines and olefines. Schorlemmer (according to his own citation) refers to a mixture of "*fuming nitric acid*" with oil of vitriol.

As to the strange attempt of Mr. N., in his first paragraph, to throw upon *me* the onus of having been the aggressor in this imbroglio, reference to the record in your JOURNAL need only be made. To his individual opinion of a "constitutional unfitness" on my part for "scientific discussion," I might retort with an opinion that his own fitness for the same is entirely and exclusively constitutional; but I shall be satisfied with saying that I admit my unfitness, both constitutional and acquired, for *this kind* of discussion, and that, so far as I am concerned, your space is not likely to be further encumbered therewith.

May 19, 1879. Respectfully, HENRY WURTZ.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In my letter on the "Utah Mineral Wax," published in your issue of May 17th, a trifling error occurred, which I should be grateful to you if you would correct. Page 350, twentieth line from bottom of article, for "less than 2 per cent," read "less than ·2 per cent."

Respectfully, SPENCER B. NEWBERRY.

NEW YORK, May 27, 1879.

ON THE ELIMINATION OF PHOSPHORUS IN THE BESSEMER CONVERTER.*

By Sidney G. Thomas, F.C.S., and Percy C. Gilchrist, Associate Royal School of Mines, F.C.S.

The non-removal of phosphorus in the Bessemer converter, owing to which the great bulk not only of British, but of French, German, and Belgian ores are still unavailable for steel-making, is a fact too familiar to metallurgists to need insisting on. The inquiry whether this unfortunate circumstance is due to causes absolutely inseparable from the conduct of the Bessemer process, or to others which are merely the accidents of a particular mode of constructing the apparatus, is obviously of vital importance. If the non-elimination be due to the intensity of the temperature, or to the short duration of the operation, or to both these causes combined, it is almost hopeless to expect that we shall ever be able to use ordinary unpurified pig-iron in the converter.

That it is to these essential accompaniments of the process that the phenomenon of the retention of phosphorus by Bessemer metal is to be ascribed, is, it is believed, the generally received opinion, and one which has comparatively recently received the sanction of the weighty authority of such eminent metallurgists as Mr. Lowthian Bell, Dr. Wedding, Professor Kerl, and M. Euverte.

An examination of the general conditions attending the removal of phosphorus in puddling and refining operations, taken in connection with the well-known action of silica on phosphate of iron at high temperatures, and the fact that in many other processes in which the temperature is very high the elimination of phosphorus is not apparently effected, seems, however, to justify the belief, which has doubtless suggested itself to other members of this Institute, that it is to the siliceous lining of the ordinary converter, and to the consequent necessarily siliceous character of the slag, that one defect of the Bessemer process is due. Under this conviction, at all events, experiments were commenced by the authors about three years ago on the effect of basic lining and basic additions in the several steel-making processes. Unfortunately the appliances at command were of a very imperfect character, and the results obtained, though highly encouraging, were, owing to defects in the miniature converter employed, which prevented our ever completely finishing a blow, not entirely conclusive as to commercially complete purification being possible.

While waiting the completion of an improved converter, which was unavoidably delayed for some time, we were encouraged by finding that M. Grüner, the distinguished professor at the Ecole des Mines of Paris, in his *Treatise on Steel* published in 1867, laid great stress on the injurious influence of the siliceous character of the cinder and lining in the converter. M. Grüner, however, seems at that time to have regarded this as one only of three causes which prevent elimination of phosphorus, and proposes as a remedy the preliminary refining of phosphoretic pig before it is attempted to convert it.

With a new converter, a large number of experiments were made in the autumn of last year, which gave much more definite results. The lining used in these experiments consisted of limestone and silicate of soda, a mixture which had been found to answer well in earlier trials.

On laying some of the first of the results obtained from this six-pound converter before Mr. Martin, of Blaenavon, he at once recognized their importance, and from that time we have been deeply indebted to him for his unfailing and consistent support, and much valuable advice and assistance. The Blaenavon Company, also, without hesitation, undertook to put up apparatus to carry the experiment further, and has with great spirit fulfilled its promise to give every facility to test the value of the theory thoroughly.

In a vertical converter, taking from 3 cwt. to 4 cwt. of metal, results entirely confirmatory of those previously observed were obtained. In the six-pound converter, liquid decarbonized iron could not be obtained; but in the new vertical converter this was readily done.

Of the results obtained when the basicity of slag was produced by waste of lining, and the removal of phosphorus was assisted by slight over-blowing, the following may be quoted. (See Table I. on next page).

Some fifty or more blows were made in this vertical converter, and the products analyzed; and it was found that, using a basic lining, it was generally necessary to continue the blow for over forty seconds after the flame dropped, in order to bring the phosphorus down very low. With this proviso, the elimination of phosphorus could be secured with absolute certainty. With a siliceous lining, the retention of all the phosphorus in the metal was, as usual, equally invariable, even when, as in Mr. Bell's experiments, the blow was continued till a considerable proportion of the iron was oxidized. At the same time, more phosphorus and less silica would be found in the slag obtained under these conditions than appears to be the case when large quantities of metal are treated under similar circumstances.

Using a lining consisting of one part fire-clay and two of ganister, and a pig containing 1·44 per cent of phosphorus, the blown metal contained 1·63 per cent of phosphorus, and the slag 32·5 per cent of silica, and ·85 per cent of phosphorus. When, however, with the same lining, 40 lbs. of lime were placed in the converter before the pig was run in, though the lining wore away very much (as might be expected), there was a decided decrease of phosphorus in the blown metal, as shown below:

	P.		P.		P.	SiO_2.	CaO.
Pig used,	1·44	Blown metal,	1·23	Slag,	·99	30·7	18·8
" "	....	" "	1·07	"	1·81	31·0	25·1

It would seem that the presence of a considerable amount of lime in a not too siliceous slag is highly favorable, and on a large scale essential, to the removal of phosphorus. As it was manifest that phosphorus was not removed until the slag was sufficiently basic, the effect of large basic additions in combination with a basic lining was tried, with the object not only of obtaining a highly basic slag at an early stage of the blow, but of rendering the operation independent of the wear of the lining, by which alone the basic character of the slag is otherwise obtained and maintained. Advantage was taken of the fact that lime and oxide of iron are fusible in many proportions. The mixture generally used consisted roughly of one part by weight of "Blue Billy" and two of lime; this will melt in an iron crucible, and may be readily added in a molten condition. It was found that by throwing into the converter cheap basic materials consisting mainly of lime, even without previous heating, before the pig was introduced, very satisfactory results were obtained without over-blowing. (See Table II).

Ten pounds of spiegel were added to all but Nos. 15 and 16; Nos. 13 and 14 were tapped before the blow was finished, to ascertain at what point the phosphorus began to go rapidly.

It will be observed that, by using these basic additions, a large proportion of the phosphorus is eliminated, while yet a considerable proportion of the carbon remains, a result which had otherwise only been obtained when there was a very considerable waste of lining. In Experiment 14 it will be noted that more than half the phosphorus is gone, while over 2 per cent of carbon is left.

With a 12-cwt. converter of ordinary pattern, expressly put up by the Blaenavon Company, only a limited number of casts were made, owing to a deficiency of blast. The first three of these, using, as before, a basic lining, gave the results in Table III.

By the kindness of Mr. Menelaus, for whose kindly assistance we have to tender our sincerest thanks, we were enabled to try, at the old No. 3 pit at Dowlais, if the superior intensity of heat which might be expected from the conversion of five or six tons of metal at a time affected the conclusions to which smaller experiments pointed. It was intended to line this converter with highly-burnt basic bricks. The bricks intended for this purpose were, however, accidentally under-burnt, and so spoilt; hence recourse was had to a rammed lining of limestone and silicate of soda. This lining, which consisted of a siliceous limestone mixed with 9 per cent of a solution of silicate of soda, would, after the carbonic acid was driven off, contain nearly 20 per cent of silica. This, by greatly diminishing the effect of the ordinary wear of the lining in making the slag

* A paper read before the Iron and Steel Institute, London, May 8th, 1879.

TABLE I.—BLOWS IN BLAENAVON VERTICAL (FOUR-CWT.) CONVERTER.

No. of Experiments.	Lining.	Pig used.	Si.	S.	P.	Spiegel added.	Steel out. Si.	S.	P.	C.	Number of blows.	Cinder.	FeO.	Fe_2O_3.	MnO	Al_2O_3.	CaO.	P_2O_5.	SiO_2.	S.	P.	Fe.
1	Limestone and silicate of soda	Middlesbrough	2·07	·16	1·08	About 10 lbs.	·03	·03	under ·04	·27												
2	Ditto ditto	"	1·93	·15	1·46	" 5 "	·05	·05	" ·04	·1*	2, 3, and 4	Thrown out	47·17	4·94	2·33	1·12	14·02	6·87	24·00	·15	2·97	40·10
3	Ditto ditto	"	1·93	·15	1·46	" 7 "	·02	·03	" ·04	·1*	"	On ingot	34·87	22·59	1·40	.....	27·48	5·79	8·60	·12	2·53	42·94
4	Ditto ditto	"	1·93	·15	1·46	" 10 "	·07	·05	" ·04	·1*												
5	Limestone and 10 per cent fire-clay	"	1·93	·15	1·46	" 10 "	·02	·04	" ·04	·16												
6	Limestone and 10 per cent silicate of soda solution	"	....	....	....	.....	·02	·12	" ·04	·10	6	On ingot	32·42	7·21	0·65	2·20	32·54	6·45	16·85	...	2·81	30·28
7	Limestone and 10 per cent fire-clay	White.	1·09	·85	·88	.....	·07	·54	·04	·49	7	On ingot	34·04	5·83	2·14	3·04	27·93	10·79	15·27	·73	4·71	30·51

* Samples of cinder from these three blows were mixed together, and an average sample analyzed.

TABLE II.—FOUR-CWT. CONVERTER.

No. of Experiments.	Lining used.	Pig used. Si.	S.	P.	Basic additions.	Steel out. Si.	S.	P.	C.	Blow.	Cinder.	FeO.	Fe_2O_3.	MnO.	Al_2O_3.	CaO.	P_2O_5.	SiO_2.	S.	P.	Fe.
11	Limestone and silicate of soda	1·97	·11	1·19	Mixture = 2 lime + 1 of Blue Billy; 20 lbs. of lime cold on bottom of converter	.....	...	·29	·10	11	Thrown out	29·81	0·81	3·91	.....	25·71	6·51	30·80	.....	2·84	23·76
										11	On ingot	18·16	5·28	3·71	1·30	37·49	17·86	14·42	.....	7·8	17·81
12	Ditto ditto	....	...	1·19	30 lbs. of Elba ore ... ditto ...	.....	...	·13	·19	12	Thrown out	51·95	4·03	3·07	.....	10·52	7·46	22·20	.....	3·26	43·24
										12	On ingot	40 11	6·33	.....	1·38	26·74	10·33	10·47	....	4·51	35·64
13	Ditto ditto	....	...	1·39	30 lbs. of "mixture" ditto	.....	trace	...	·58	·92												
14	Ditto ditto	....	...	1·39	45 lbs. of "mixture"	.....	"	...	·61	2·19												
15	Ditto ditto	....	...	1·39	48 " "	.....	·02	...	·20	·53	15	On ingot	24·22	4·88	1·40	1·19	36·12	11·11	19·50	.....	4·85	22·28
16	Ditto ditto	....	...	1·39	32 " "	.....	·07	·09	·04	·10	16	Thrown out	28·55	14·20	1·49	.....	24·51	8·56	19·85	.....	3·74	32·16
										16	On ingot	38·87	6·52	0·93	2·08	31·11	6·69	13·30	.....	2·92	34·81

TABLE III.—TWELVE-CWT. CONVERTER.

	Pig used. Si.	S.	P.	Steel. Si.	S.	P.	C.	Blow.	Cinder.	FeO.	Fe_2O_3.	MnO.	Al_2O_3.	CaO.	P_2O_5.	SiO_2.	S.	P.	Fe.
17. Middlesbrough	2·71	·14	1·38	·04	·05	under ·04	·55												
18. "	2·71	·14	1·38	·17	·09	·42	·57	18	On ingot.	12·29	1·19	13·00	.....	33·79	20·31	15·80	·10	8·87*	11·50
19. "	2·71	·14	1·38	·04	·07	under ·04	·10	19	"	19·53	9·01	5·29	1·24	38·66	11·20	14·36	·15	4·88	21·60

* Alex. E. Tucker, F.I.C., of Rhymeny, has kindly determined the phosphorus in 18, and he makes 9·20 per cent.

basic, rendered larger basic additions necessary than it was deemed prudent to make in the first two blows. In the first blow about 2 cwt. of lime was added cold, and in the second nearly 2 cwt. of lime and one of Bona ore. The slag was decidedly siliceous in both cases, and, of course, only a minute quantity of phosphorus was removed.

	Pig used.		Blown metal.		Steel.	
Blows.	1.	2.	1.	2.	1.	2.
Si.	2·97	2·62	trace	trace	trace	[trace
P.	1·21	1·21	1·21	1·19	1·11	1·11
				under		
C.	....	.....	none	·10	·54	·42
S.	·06	·10	0·5	·10	·05	·09

Mr. Jenkins, of Dowlais, has kindly furnished us with his analysis of the same blows. He finds 1·08 in the steel from the first blow, and 1·03 in the steel from the second blow.

The cinder with the steel contained in the first blow 38·8 per cent of silica, and in the second blow 36·18. The pig used was too high in silicon for phosphorus to be readily removed without very large additions of lime.

(TO BE CONTINUED.)

ON THE METHOD OF EXTRACTING GOLD, SILVER, AND OTHER METALS FROM PYRITES.*

By W. A. Dixon, F.C.S., Cor. Mem. Nat. Hist. Soc. Glasgow.

(*Continued from page* 372.)

As the formation of sulphate of copper during the calcination of pyrites is believed to take place in two stages, represented by the equations—

$$CuS + 3O = CuO + SO_2, \text{ and}$$
$$_3CuO + SO_2 = CuSO_4 + Cu_2O,$$

I tried whether the addition of successive portions of raw ore would not gradually convert the greater part of the copper into sulphate during the roasting. After well roasting a quantity of pyrites, I extracted the sulphate formed with water from a sample; this was then dried, and the copper present as oxide was dissolved by dilute hydrochloric acid, and its amount determined. It was found to be equal to 6·54 per cent of copper.

To 700 grains of the remainder (from which the sulphate had not been extracted) I added 40 grains of fresh pyrites and roasted sweet at a dull red heat in a small muffle, which took about an hour; treated a portion as before, and found the copper present as oxide to be 6·01 per cent. The remainder was again made up to 700 grains with once-roasted ore, 40 grains raw pyrites added and roasted sweet, when other 40 grains were added, and the calcination continued until complete, when the copper present as oxide was found to be 4·79 per cent. The oxide was thus steadily reduced, but the process was evidently too slow to be of use practically.

I then calcined 400 grains of pyrites, mixed the residue with 200 grains of raw ore, and again calcined, then added 100 grains of raw ore, and continued the operation until fumes were no longer evolved, when the residue was found to contain 6·46 per cent of copper as oxide. This process was therefore of no value; but I noticed that after each addition of pyrites, considerable bodies of white vapors were evolved, and, as the ore contained but little arsenic, this could only arise from the formation of sulphuric anhydride. I therefore proceeded to determine how much sulphuric acid could be obtained by calcining a mixture of raw pyrites and roasted residue.

A combustion-tube was fitted with a smaller tube leading through water in a Woolfe's bottle, the second neck of which was connected with an aspirator, and mixtures of raw and roasted pyrites were heated to a dull red in the combustion-tube, a current of air being maintained through the whole apparatus, and the ore ocasionally stirred with a bent wire. In this arrangement, however, I found that a large quantity of the white fumes escaped condensation, and I therefore substituted for the Woolfe's bottle a flask containing a small quantity of water, the exit-tube of which was connected with an inverted Liebig's condenser. The water in the flask was kept gently boiling, and I found that by this arrangement the condensation was very good. One hundred (100) grains of raw pyrites, containing 37·86 per cent of sulphur, mixed with 50 grains of the same, which had been well roasted and the copper extracted, were thus treated. The residue in the tube was digested with hydrochloric acid, and the sulphuric acid formed determined in one half of the solution, while in the condensed water sulphuric acid was determined in one fourth.

½ of residue gave barium sulphate.... ..... 31·65 grains.
¼ of condensed water gave barium sulphate.... ... . 35·82 "

Calculated on the 100 grains, this gave—

Sulphuric acid in residue = 8·68 sulphur.
" " water = 19·86 "
Total..... 28·54 "

Similarly, 100 grains with 20 grains residue gave—

½ residue, barium sulphate..... .... 31·69 grains.
¼ water, " " .... 34·59 "

which, calculated on 100 grains used, gave—

Sulphuric acid in residue = 8·70 sulphur.
" " water = 19·00 "
Total..... 27·70 "

On reducing the roasted ore to 15 grains, a smaller return was obtained; but these results showed that by proper management nearly three fourths of the sulphur present in the ore could be obtained as sulphuric acid, either in the free state or in combination with copper and iron—this quantity is nearly sufficient to dissolve both the copper and iron, the latter as ferrous sulphate, the theoretical quantity required with the ore operated on being 29·67 per cent of the sulphur converted into sulphuric acid—and opened at once a prospect of the attainment of the desired result.

As it was probable that such a result would not be attained on a large scale, I proceeded to examine the action of aqueous sulphurous acid, and found that by treating ore calcined at a low temperature therewith, a considerable quantity of sulphate of iron was obtained in solution along with the sulphate of copper; also, that, as Muspratt had observed, aque-

* A paper read before the Royal Society of N. S. W., August 1st, 1877; and published in the *Chemical News*, London, December 27th, 1878.

ous sulphurous acid readily attacks finely-divided metallic iron, forming sulphite and hyposulphite.

The form the process now presented itself in was to calcine the ore at a low temperature and extract the sulphates of copper and iron formed with the mixed sulphurous and sulphuric acids formed during the roasting, then to reduce all the iron to the metallic state and remove it in the same manner, when the gold, silver, antimony, and lead would be left. The only points that remained to be decided were, how to reduce the iron to the metallic state and to obtain the copper from solution.

The reduction of the iron was necessary, because the sulphuric acid obtained would be too dilute to act on the ferric oxide, and the quantity would be insufficient to form ferric sulphate, while sulphurous acid has no action on the ferric oxide. I first attempted the reduction of the iron by hydrogen at a faint red heat, which gave the metal in a form very suitable for the action of sulphurous acid. This had to be abandoned, however, on account of the cost and the danger of explosion. Coal-gas reduced the iron readily; but, at a low temperature, much finely-divided carbon was deposited among the iron, which rendered wetting it difficult, and the powder was very pyrophoric. Reduction by finely-ground carbon at a low red heat, I found could be so managed as to obtain the iron as a metallic powder which was readily attacked.

For the removal of the copper from solution, the use of metallic iron had to be abandoned, on account of the quantity required to precipitate it from its solution as sulphate, which on the large scale is found to be about three times the quantity of the copper precipitated. As it would be advantageous to recover some of the sulphuric acid, the use of sulphureted hydrogen presented itself; but after repeated trials, the exceeding bulk of the precipitate presented an obstacle which, on any considerable scale, would be insuperable, and has indeed been found to be so where tried.

I therefore determined to try whether it could not be recovered by crystallization; and the result of many trials showed that by taking a cold saturated solution of sulphate of copper, and, after adding sulphuric acid, saturating it with sulphurous acid, I had a solution which would render all but traces of the copper and sulphate of iron in well-roasted pyrites soluble without dissolving any. In fact, it deposited crystals on being mixed with the calcined ore from the sulphates of copper and iron, withdrawing crystallization water. By then washing by displacement with a solution of sulphate of copper saturated in the cold, made boiling hot as long as the escaping solution deposited crystals on cooling, the residue was obtained saturated with a solution of sulphate of copper which would not deposit crystals. This solution could be so displaced by water equal to one half the bulk of the residue as to leave only 0·67 per cent of copper in a soluble form; while, if an equal bulk of water was used, the copper left was only 0·12 per cent. Practically, therefore, it was possible to remove all the copper in such a way as to deposit it in crystals without increasing the bulk of the fluid, so that no evaporation would be required.

The mixed crystals of sulphate of copper and sulphate of iron evolve on calcination large quantities of sulphurous and sulphuric anhydrides, which could be condensed in a solution of sulphate of copper and used to extract a future lot.

I now proceeded to treat twelve pounds of the dressed pyrites of which an analysis is given above. One half-pound at a time was calcined in a muffle having the draught-holes closed with clay, and an iron door fitted at the front. From the back of the muffle an iron pipe led into a small upright leaden tower fitted with movable perforated leaden trays, so that the evolved gases passing over the trays in succession finally escaped to the chimney at the top. On the upper tray water was allowed to drop through a trapped tube, and, dripping from tray to tray, flowed off through a pipe at the bottom, while steam was admitted at the bottom in sufficient quantity to keep the lower half of the tower warm. Half a pound having been calcined, the copper and sulphate of iron were extracted with water containing sulphuric and sulphurous acids, the residue was reduced with carbon at a dull red heat, and the metallic powder, being spread on the trays, was subjected to the action of the gases from the second half-pound, the residue from which was treated as before, and to the gases from the third, and so on, until the whole was operated on. The last half-pound was, after reduction, treated with dilute sulphuric acid, my parcel of ore being exhausted. The whole of the soluble matter was then extracted with water, which reduced it to a small bulk, which was almost entirely free from iron, but contained a small quantity of copper as sulphide. It was therefore calcined on an iron tray, and the copper extracted by dilute sulphuric acid. The dried residue weighed 21½ ozs., and, being melted with some oxide of iron and a little carbonate of sodium and carbon, gave a brittle button weighing 5¾ ozs. To remove the antimony, as being the most convenient for laboratory use, this button was fused with carbonate of sodium and nitrate of potassium, which left a button weighing 3¾ ozs., which was cupelled to obtain the gold and silver. These were parted with nitric acid; the finely-divided gold, folded up in lead-foil, was again cupelled, giving a button weighing 37·54 grs. The silver was precipitated as chloride, to which was added a small quantity precipitated from the copper solution, and on fusion with carbonate of sodium gave a button weighing 158·65 grs. The first cupel button was ground up and fused with sodium carbonate and charcoal, when it gave a button of lead weighing 2 ounces.

The mother-liquors from the sulphate of copper crystals were evaporated to dryness (this evaporation was necessary in the experiment, to recover all the copper, but would be unnecessary on the large scale, the mothers being then used again and again indefinitely so long as there was fresh material to be extracted), and the whole of the sulphate was dried. One half was heated to a full-red heat, to reduce the sulphates to oxides; the other half was heated to a dull-red, to decompose the sulphate of iron, then mixed with carbon and a little sand and heated to fusion, when the oxides were added and metallic copper obtained, which, with a prill obtained on re-fusing the slags, weighed 31¼ ozs.

With the exception of using extraneous sulphuric and sulphurous acids for the extraction of the copper and sulphate of iron formed during the calcination, the whole process was carried out as nearly as practicable in a laboratory as it would be on a large scale. There are good working methods for smelting out the lead and antimony with the gold and silver, and for separating these metals, which I need not detail. The large quantity of sulphate of iron extracted from the roasted pyrites by the use of sulphurous acid would give on calcination more than enough sulphuric acid to extract the oxide of copper formed. The average quantity of sulphate of iron obtained from this ore was about one half the weight of the sulphate of copper produced.

To conclude, the yields obtained from 12 lbs., as compared with those shown by analysis and assay, were:

	Analysis.	Yield.
Copper	17·02 per cent.	16·5 per cent.
Lead	2·01 "	1·04 "
Antimony	3·9 "	Not recovered.
Silver	62 ozs. 9 dwts. 18 grs.	61 ozs. 13 dwts. 22·7 grs.
Gold	12 ozs. 10 dwts. 0 grs.	14 ozs. 11 dwts. 23·2 grs.

These numbers are very satisfactory; and, although it is scarcely to be expected that the results would be equally satisfactory working on a large scale, it seems more than probable that returns better than those by any other process would be obtained.

While experimenting on the removal of copper from solution, I found that this could be conveniently done by filtering the slightly acid solution by ground matte obtained from the same ore by simple melting. This method of separating copper from solution may be of advantage in treating poor copper ores or pyrites containing small quantities of copper; but it is obvious that for ores in which gold and silver form an important constituent, it is not so advantageous as the process already described—as, first, the gold and silver, so far as contained in the matte used for precipitating the copper, would remain with that metal, and be lost; secondly, the sulphuric and sulphurous acids, which in the process above described are obtained by calcination of the sulphates of copper and iron, and are available for the extraction of roasted ore, giving with those evolved during the roasting a superabundant supply of acid, would be lost. Neither of these objections, would, however, have any force if copper were the only metal to be extracted. The matte obtained by simply melting poor cupreous pyrites, with the addition of sufficient roasted ore to form a flux for the silica present, consists of sulphide of iron containing more or less sulphide of copper; and by filtering through a bed of this matte the solution of sulphate of copper obtained by calcining and extracting a large portion of the ore, the copper is deposited, while the iron goes into solution. I expected to find that the whole of the iron could be thus removed from the matte which would be converted into sulphide of copper, but found that in all cases the action stopped short of this. The percentage of copper in the treated matte varied from 30 per cent to 33 per cent, approaching therefore to copper pyrites, which contains 34·6 per cent of copper. From this residue refined copper could be made in three operations.

This method of treatment, as well as the one above described, for the separation of the various metals, has in common with ordinary copper smelting the advantage that no materials except those yielded by the ore are required, with the exception of fuel, water, and air.

In working ores on the large scale for the recovery of gold and silver by the process which I have founded on the experiments of which I have given a brief *résumé*, it is advisable to obtain the sulphides as free as possible from vein stuff before proceeding to the actual treatment. To this end, the crushed ore may be washed, when any free gold contained in the quartz may be recovered by amalgamation, or in particular cases the ore may be subjected to a preliminary smelting. The method of getting rid of the quartz must depend entirely on the price of labor, fuel, etc., and the composition of the ore. I have found, on the one hand, that nearly all the gold and silver are obtained in a matte, if it amounts to from one half to two thirds of the original ore; while, if the matte is smaller, both gold and silver are left to a considerable extent in the slags; but there are few ores which would give such a proportion of matte without preliminary dressing. On the other hand, ores containing sulphide of silver lose much of that metal by washing; the sulphide being exceedingly friable, it is carried away in the slimes, which are often richer in silver than the original ore.

(TO BE CONTINUED.)

PURIFICATION OF SMOKE.—An apparatus has been designed by Messrs. Johnson & Hobbs, of Manchester, by which black smoke is so purified as to emerge from the chimney of the furnace as a thin, white vapor. The result is brought about by an enlargement of the flue between the furnace and chimney, three paddle-wheels with projecting blades being inserted in this enlargement, the same revolving in a tank of water and producing a fine spray through which the smoke must pass. This spray carries with it the chief impurities, and falls first on a coke screen, and then successively on two wooden screens of lattice work. The city analyst of Manchester has very thoroughly tested it. It is affirmed that the water thus operated on will absorb from 75 to 90 per cent of the sulphuric acid evolved in the combustion of coal.

AMERICAN STOVES ABROAD.—According to the statements of our consuls and commercial agents in European countries, there would appear to be little encouragement for the export of American stoves to the continent, notwithstanding the resources of our manufacturers and the varied construction of these articles. The reasons assigned are somewhat different for each country, but with several have distinct reference to unsuitability, more particularly from the character of the fuel used. At Antwerp, only a few have been imported, and these by American families. The customs of the Belgians render the baker less useful than here, and, fuel being costly, the fire-places are too large. Were anthracite coal imported, a fair business, it is believed, might be done in self-feeders for a time through energetic pushing, though, for economic consumption, as compared with the native wrought-iron stoves, bakers, and ranges, there seems to be some question, and freights and commissions might so handicap importers as to overbalance advantages. In replacing broken parts, the smiths are apt to render the stoves worthless. So much for Antwerp. In Brussels, American stoves are wholly unknown. Wood is the general fuel of the country, and peat is extensively used. The stoves used are manufactured in the country, and sold at a lower price than would be possible for the imported article. At Copenhagen, the competition of German stoves excludes American. At Odessa, our stoves are utterly unknown; but English and German ranges, similar to those made here, are in use in the houses of the upper classes; the poor content themselves with ranges of stone, mud, or brick. The fuel is generally wood for heating and coal for cooking.

PROGRESS IN SCIENCE AND THE ARTS.

General Science.

Fish as Brain-Food.—Dr. J. W. Draper, in a recent publication, effectually disposes of the widespread popular fallacy that fish food is peculiarly suited for the nourishment of the nervous system, and an admirable "brain-food." The fact that phosphorus is consumed in the brain and nervous system in sensation and intellectual activity appears to be well established, from which the necessity for its replacement follows as a matter of course. The idea, however, that fish afford the best medium for this purpose appears to be based upon the erroneous inference that the property they possess of becoming phosphorescent is to be ascribed to the abundance of phosphorus which their flesh contains, whereas it is a property possessed by other organized substances in process of decay—notably by willow-wood, which shines even more brilliantly than decaying fish, and is due to the slow oxidation, not of phosphorus, but of carbon. Dr. Draper's argument may be summed up in the statement, "The flesh of fish contains no excess of phosphorus, nor does its shining depend on that element."

Foreign Telegraphic Notes.—From a recent issue of the *Journal of the Telegraph* we glean the following items of interest: The Norwegian authorities have voted the sum of 46,000 kr. for the construction of a cable from Christiania to Arendal, to connect with the projected German cables at the Island of Romoe. By agreement between the governments of Germany, Sweden, and Norway, the former government proposes to extend her lines to the island named at her own cost, with the understanding that the latter provide for carrying on the line so as to connect it with the whole Scandinavian telegraph system, for which the appropriation above named makes provision.——The projectors of the proposed new French-Atlantic cable are alleged to have failed to obtain subscriptions to their stock to an amount sufficient to warrant the undertaking. ——The cable between India and Ceylon, some thirty miles in length, and which has for some time past been defective and condemned as unfit for repair, has just been put in good working condition through the persistence of Mr. R. S. Brough, by providing it with new shore ends.——The Rangoon, with the first portion of the South African cable on board, has passed through the Suez Canal; a second vessel with the remainder will follow at once.——In future, it is announced, the use of the telegraph wires for the dispatch of local messages in the city of Paris will be abandoned; the net-work of pneumatic tubes having been completed, transmission by that method will be employed instead.

Prof. Bert's New Anæsthetic, a mixture of nitrous oxide (85 parts) and oxygen (15 parts), administered under pressure, has lately been tried in surgical practice at one of the Parisian hospitals, with marked success. The inhalation of the mixture produced complete insensibility and muscular relaxation within a quarter of a minute. During the period of anæsthesia, the pulse remained quite normal and the color natural, and the awakening was calm. The patient felt no pain during a very severe operation. Prof. Bert, on the strength of this demonstration, claims to have shown that his anæsthetic mixture (which, incidentally remarked, is without effect when applied at ordinary pressures) supplies to surgery a simple, effective, and harmless substitute for ether and chloroform; one that is easily applied, and is neither preceded nor followed by unfavorable or dangerous symptoms. A detailed account of this experiment will be found in the Paris correspondence of the London *Lancet*, and a full abstract in the *Scientific American* of May 24th.

Electric Light Notes.—Paris, the central point, from which the world at large had expected great things in the development to practical usefulness of this fascinating invention of modern science, appears at length to have succumbed to discouragement, and soured on the electric light. This suspicion we base on the strength of the lately-published announcement that the application of the General Electric Light Company for a three-years' concession for the lighting of a number of the public ways of that city has been rejected by the municipality. This rejection, it is stated, was coupled also with the announcement that the city would no longer contribute pecuniarily to the furtherance of the company's experiments. This action of the municipal council is, in effect, a declaration that the electric light, in its present state of development, has failed to meet the requirements of a public lighting system. This opinion found expression in the report of the council upon this subject, in which it is held that electric lighting is still in an experimental state, and that in one important particular (that is, the regularity of its working) it is still highly defective; the number of extinctions of the lamps and their duration in the Parisian trials having shown the necessity of maintaining the apparatus for gas-lighting in connection with the electric lamps, to provide for the frequently occurring failures of the latter. Other defects, perhaps less decided than this, doubtless had their weight with the council in reaching its conclusion; such, for example, as the considerable cost of the electric light as compared with gas-light, and the remarkable diminution of its brilliancy in foggy weather, said to be much more pronounced than with gas-light. To light the 1800 kilometers of the streets of Paris, at present lighted with gas, was estimated to require motive power to the amount of 100,000 H.P.——The report of the Metropolitan Board of Works upon the result of the trials of the electric light on the Thames Embankment is said to contain the statement that "the defects connected with the light must prevent its general adoption." The Thames Embankment experiment demonstrated that the electric light cost 2¼d. per hour and per lamp more than gas-light of equal power.——Tyndall is credited with having made the statement that great improvements in the art of electric lighting are inevitable, but that gas has such general utility that it will not be beaten out of the field by electricity.——Professors Houston and Thomson, two of the ablest investigators in the field of electricity, are reported to have succeeded in constructing a dynamo-electric machine of heretofore unequaled power.——The agitation of the electric-light question is reported to have had a very beneficial effect upon the gas lamps in the prominent thoroughfares—the gas companies having, with the aid of a new form of burner, succeeded in so greatly increasing their brilliancy "that people hardly recognize it, and strangers are said to have actually mistaken it for the electric light." We know of many cities on this side of the water where a similar improvement in the duty of the street lamp would not be amiss, and where also the residents "hardly recognize it," though the stranger within their gates has never been known to mistake it for the electric light.——Cleveland, at present, is the city to which the friends of electric lighting for public service may look without discouragement, and even in this case their satisfaction must be tempered with discretion in its utterance lest it prove also to be premature. The news from that city is to the effect that the regular lighting of Monument Park with the "Brush electric light" began at 8 o'clock, April 29th. Twelve electric lamps were used to take the place of one hundred and ten gas-lights, and report says the illumination was much more effective. The most interesting feature of the report is contained in the statement that "the electric lights are furnished to the city, under contract, for $100 per year less than the cost of the gas formerly used."

Metallurgy and Mineralogy.

Reviewing the Steel Rail Controversy (apropos of Mr. Vanderbilt's recent English purchase), Mr. William A. Sweet, an American metallurgist, has advanced the opinion that, the chemical constitution of the rails being the same, the English mode of rolling on two-high trains will produce a rail better adapted for wear than those rolled by the common American practice on three-high trains, for the reason that in the first case "the rail, when it is finished, is colder, and is left in a more condensed condition, and therefore better prepared to receive the wear of wheels. In other words, it is stronger and tougher."

Chemistry, Physics, and Technology.

The Iron Antidote for Arsenic, as is well known, loses much of its efficiency, unless the precipitated oxide has been freshly prepared. Dr. James B. McCaw, a Canadian physician, publishes in the *Can. Journal of Medical Sciences* a convenient formula for the preparation of a mixture which he declares to be infallible. He proposes tincture of chloride of iron, 1 dram; soda (or potassa) bi-carbonate, 1 dram; tepid water, a teacupful. From this mixture the hydrated sesqui-oxide of iron is at once thrown down, and the entire mass may be administered *ad libitum*.

A New Process for the production of a superior artificial stone is described to consist of the employment of a thorough mixture of six parts of fine sand and one of slacked lime, which is exposed for about three days to a high temperature under a pressure of some three atmospheres. The result is affirmed to be the partial decomposition of the siliceous particles with the formation of silicate of lime, which acts as a cement, so that the mass, when cooled down to the ordinary temperature, hardens. This hardening process is said to continue for some weeks after exposure to the air, and the final product is declared to be as hard and solid as good sandstone. For the details of the operation we refer our readers to a late issue of the *American Architect*.

Concerning Celluloid.—The pertinacity with which an error will cling to life and propagate itself, especially where it is aided and abetted by the press, was never better illustrated than in the case of an article now making the grand tour of the American technical papers, on the subject of "Celluloid," and in which the author, while giving a very interesting and doubtless accurate account of the remarkable diversity of uses to which this extraordinary substance has been applied, makes the inexcusable mistake of asserting that celluloid does not contain gun-cotton. The author (whose article first appeared in the New York *Evening Post*), who has probably taken for granted what he was told, is not very clear on the mode of procedure in making the substance, though very decided on the point of its freedom from gun-cotton. "Celluloid," he says, "is a composition of fine tissue-paper and camphor, treated with chemicals by a patented process." Had the author taken the trouble to consult the patent specification of the Messrs. Hyatt, in which their process of producing celluloid is fully set forth, he would have observed, what is well known, that the description referred entirely to a method of treating pyroxyline (gun-cotton), and that the treatment of the cellulose, of whatever kind employed, with camphor, was first preceded by its conversion into gun-cotton; and he would have spared himself the commission of the sentence following, to wit: "A rather common impression that it contains gun-cotton is a mistake, which arises from confounding it with collodion." The fact is, that the "rather common impression that it contains gun-cotton" is strictly correct, as is also the "confounding" of it with collodion, inasmuch as it is precisely analogous to this compound—the one (collodion) being a solution of gun-cotton in a mixture of alcohol and ether; while the other (celluloid) is a solution of gun-cotton in camphor (the solution being effected under the combined influence of heat and pressure).

This error of the *Evening Post's* correspondent, which mars an otherwise highly-interesting article, has been repeated in almost every one of our domestic technical exchanges that has come to our hand, until the aggravation of seeing it make its inevitable appearance on opening a new arrival has become unendurable. (*Hinc illæ lacrymæ.*)

An Improved Device for Testing Petroleum Oils has been brought out by Mr. Holly, of this city, the special advantage of which will be apparent to every chemist or inspector, whose duties have at any time included the determination of the flashing and burning points of these products. With the common oil-tester it is extremely difficult, even for one skilled by long practice, to get reliable results except by taking the mean of a number of tests, since the approach of a jet of flame, however small, to the surface of the oil as usually practiced, destroys the accuracy of the test more or less, either by the local heating of the oil or by the production of disturbing air-currents. Mr. Holly modifies the apparatus usually employed by arranging the poles of a battery within three eighths of an inch from the surface of the oil, so that he is able to pass a spark between them, as the thermometer registers an increase of one degree in temperature. By this means the disturbing influences above noted are reduced to a minimum, and much greater accuracy in the results of such examinations is assured.

Engineering, Mechanics, etc.

A Valuable Hint to life insurance companies is given by the *Plumber and Sanitary Engineer*, in the suggestion that the homes of their victims may be, and frequently are, more hazardous risks than their bodies, and the suggestion is thrown out that, instead of hammering at a man's chest

to find if he has a tendency to any disease, it would be quite as useful for them to ascertain if he has not a cess-pool on his premises leaking into his well of drinking-water, or untrapped pipes under his basins and water-closets, inviting filth diseases. The fact is noted that more persons die in this city of such diseases than from almost any other cause, and that, in spite of it, a man living in the very midst of contagious influences, and in daily liability of contracting preventable diseases like diphtheria and typhoid fever, would find no difficulty in contracting for a heavy policy on his life. Our contemporary believes that there would be a notable improvement in household sanitation and in the financial condition of the companies if they should proceed to act on the policy that hazardous homes make hazardous lives.

Railway-Brakes—Safety-Lamps.—At the usual spring meeting of the (British) *Institution of Mechanical Engineers*, lately held in London, the following papers were read: Recent Brake Experiments upon the Lyons Railway, by M. George Marié, of Paris, describing the results of recent experimental trials of the Westinghouse and the Smith Vacuum Brake by the road above named; The Effect of Brakes upon Railway Trains, by Captain Douglas Galton, C.B., F.R.S.—an exhaustive analysis of the various elements involved in the action of brakes; The Construction and Comparative Merits of the Safety-Lamps Generally in Use, by Mr. Alan C. Bagot. The writer lays down the following as the qualifications of a good safety-lamp: (*a*) In an atmosphere of fire-damp at too high a velocity, the lamp should be extinguished and should not explode; (*b*) the lamp should be able to stand a high velocity without extinguishment, and be notwithstanding a delicate testing lamp in the hands of the fire-trier; (*c*) a body of gas burning within the gauze should be capable of being extinguished at once mechanically, without opening the lamp. The author discusses the relative merits of the Davy, Clanny, Mueseler, Stephenson, and Williamson lamps—the five varieties chiefly used in English mines—and gives the results of a series of experiments at the Cannock and Rugeley collieries to determine their stability under different velocities of fire-damp. His opinion is expressed in favor of the self-extinguishing lamps on the principle of Stevenson's, and in the table of experimental results which he gives the Stevenson and Williamson lamps are credited with the best record. The concluding paper was on the subject of Electric Lighting, by Dr. John Hopkinson, F.R.S., recounting some tests of various dynamo-electric machines to determine their consumption of power, effectiveness under varied resistances, etc. A full record of the papers and the discussions thereon will be found in (London) *Iron* of May 3d.

The Report of the New York State Survey for the year 1878, which is just received from James T. Gardner, Esq., Director, brings out certain facts of great interest to the people of the State, and demonstrates that the appropriation of $15,000 a year made for its continuance is a most excellent provision. The progress report for 1878 is accompanied by a number of outline maps, showing the few points that have been accurately located by the survey, and the entire unreliability of the present maps of the State in locating towns, rivers, and cities is affirmed to be very glaring; and the ideas of the aspects of the State derived from existing maps are shown to be so vague and misleading that "the survey has the attractive novelty of exploring a new region." Mr. Gardner declares that "the cities, villages, county, and town boundaries, streams, lakes, roads, and railroads, which cover the best State map (that of French, 1860), are all falsely placed. Our map shows that the distance from Albany to Auburn is a mile and a half less than that given by French; that the breadth of the State from Pennsylvania to Lake Ontario is three quarters of a mile greater; and that the spot where French has placed the city of Oswego is really covered by the lake. No one can tell the endless errors in minor details of a chart whose misplacements are counted by miles at the most important cities, and which puts the warehouses of Oswego in five fathoms of water; yet such is to-day the best map of the State of New York."

The Sutro Tunnel.—The future utility of this great work of engineering is the subject of an editorial in the last *Mining and Scientific Press*, and the opinion is maintained that while it will doubtless be of great advantage to the mines of the Comstock in freeing them more readily of water, and of facilitating the ventilation of the deep workings, it is not quite so clear to the writer that the ores from these mines will ever be brought out through the tunnel. The reasons upon which this opinion is based are, that the raising of ore to the level of the tunnel and its loading upon cars to make the journey of four or five miles to the point of exit, will be attended with as much or even greater cost and with greater delay than with the present appliances, by which they are brought directly to the surface. For the same reason, too, the writer doubts if the taking of the miners in and out of the mines via the tunnel would be as practicable as the course at present in use, since they would have to be lifted and lowered by hoisting machinery as at present.

For the New Jersey Ship-Canal to unite the Passaic and Hackensack rivers with the Hudson, and effect a saving of about 12 miles by water between Newark and this city, three routes are reported to be under the consideration of General Newton, to whom the government has intrusted the duty of making the surveys. One would pass directly from Newark Bay through Bergen Hill, by a cutting of 4732 feet; a second would take a diagonal course through the hill, and save about 250 feet of cutting over the first; and the third would follow a straight line from Newark Bay, near the Beacon light, to a point midway between the two bays, where they intersect the Morris Canal, and thence follow the line of the canal to New York Bay.

The Total of New Railroad mileage constructed in the United States during the present year is reported by the *Railroad Gazette* of May 23d to have reached 562 miles, as compared with 312 miles reported for the corresponding period of 1878, and 365 miles in 1877.

The Isthmian Canal Conference, the meeting of which in Paris we recorded last week, is still actively engaged in the consideration of this important problem. The merits and defects of the numerous propositions that have been advanced during the past twenty-five years are being subjected to a thorough and searching criticism, and it is probable that if the Conference accomplishes nothing else, it will at least settle beyond further discussion, in the engineering world, the question of the most desirable route across the Isthmus. At the time of this writing, the Conference had not yet arrived at a decision in the selection of a route; but the opinion is generally entertained that either Selfridge's Atrato-Napipi route or one of the two proposed lines across Nicaragua would be selected. The Conference, it is announced, will come to a decision upon this question during the present week.

The Report of the Annual Meeting of the Silk Association of America, lately held in New York, shows a gratifying improvement both in the quantity and quality of our manufactures of this commodity. The imports of raw silk during 1878 were 38 per cent greater than during the preceding twelve months, and the goods manufactured here were generally of a higher class than heretofore.

The Latest Addition to the List of Explosives, and for which there is claimed a greater destructive power than any other form of nitro-glycerine, or gun-cotton, has been devised by Prof. Abel, the well-known chemist to the British War Department. It is made by the addition to Nobel's "explosive gelatine" (a gelatinous substance produced by the solution of the soluble variety of gun-cotton in nitro-glycerine) of about 10 per cent of explosive cotton, or tri-nitro cellulose. The resultant composition has a greater firmness than the soft and pliant jelly of Nobel, making it more convenient to handle, and, as Mr. Abel affirms, it is a still more vigorous explosive. "The destructive action of this modified gelatine upon iron plates and heavy masses of lead," it is reported, "has been found to be greater than any other form of nitro-glycerine or gun-cotton, and there is no room for doubt that for torpedoes and military mining, where the object is to secure the greatest degree of violence, regardless of consequences, the compound will find valuable application." For an extended discussion of theoretical questions on which this conclusion is based, see H. Baden Pritchard's article in London *Nature* for May 8th.

The Navisphere is the name of a new nautical instrument, lately described before the French Academy by M. de Magnac. It is designed to indicate, without calculation, the names of the stars above the horizon at a given moment (with altitude and azimuth), the angle of route for going from one point to another by the arc of a great circle, and the approximate distance between these points. Spherical triangles may also be solved with it. For a detailed description see the *Comptes Rendus* of the Academy; and for an abstract, London *Nature*, May 8th.

TAYLOR COUNTY (W. VA.) GAS-COAL.

Messrs. Whitney, McCreary & Kemmerer, of Trinity Building, are the agents for the sale of this coal. Prof. Charles A. Doremus says: "It compares, as a coal, very favorably with the best gas-coals from other sources. Mr. Edwin Ludlam, President of the People's Gas-Light Co., of Brooklyn, says: "I have no hesitation in saying that it is at least equal in every respect to any coal received by us from the various Pennsylvania collieries, and a very desirable article for gas purposes." Mr. F. C. Sherman, Superintendent of the New Haven Gas-Light Co., says: "The results obtained at the New Haven Gas-Works, from the boat-load of Taylor County coal, were equal to those from Penn, Westmoreland, or Youghiogheny coal worked under like conditions." A test of this coal at the Ninth Ward Works, in Philadelphia, gave 12,563 feet of 16¼ candle-power gas to the gross ton. A working test at the Spring Garden Works in the same city, gave 12,454 feet of 16 candle-power gas.

GENERAL MINING NEWS.

ARIZONA.

The Arizona *Miner* says that the gold-bearing ore from the Poor Man mine in Bradshaw Mountain is very rich. The pay-streak is eight inches in width.

The Grand Canal Company, in Maricopa County, has moved quietly along in the work of digging an eighteen-thousand-dollar ditch, leading from a point on Salt River, a mile and a half above Hayden's Ferry, seventeen miles in the direction of Agua Fria, and carrying about 30,000 miners' inches of water. It is estimated that fully 10,000 acres of good land will be rendered worth from five to ten dollars an acre as soon as water is turned into the ditch.

"The sinking on the La Plata mine, east extension of the Mack Morris, resulted in finding at water-level a continuous body of high-grade ore interspersed throughout the entire width of the ledge; 7 feet between smooth walls, proves the great value and unquestionable permanency and richness of the mines of Richmond Basin. As little as the mines are now developed, a 20-stamp mill could be kept constantly at work day and night, on ore that would average $100 per ton. The Stonewall mill is running successfully. Work on the Newton mine is progressing with good prospects. Every thing looks well at the Independence. The Armit mine is looking well and work is being pushed. Work for the present has been suspended on the Bohemia. The Antler mine looks very promising; some native silver has been taken out this week. The Cox & Coplin mines are still turning out very fine ore, and plenty of it."

THE GLOBE DISTRICT.

The *Silver Belt* of May 23d says:

"The miners at work in the Mexican mine have made an important discovery which adds greatly to the value of the property. The vertical working-shaft attacked the ore-body through the country rock on the south, defining the hanging-wall, while the foot-wall was still wanting. The ore is chloride and the vein ten feet wide."

CALIFORNIA.

BODIE DISTRICT.

The *Standard* of May 24th says:

"The Bodie District is now in a most favorable condition of development, and several of the mines have materially improved within the last two weeks. The Standard mine has opened up a new vein from the 384-foot level of the new shaft. This vein was supposed to be the old Standard ledge, and an upraise was started on it to connect with the 550-foot level from the incline. This upraise failed to come out in that level; and it has now been ascertained beyond a doubt that it is an entirely new find and a separate ledge, and about 40 feet west of the main Standard lode. The importance of this discovery can not be overestimated. A drift has been run north on this new ledge 200 feet, in which it has been less than four feet wide and the grade of ore not less than $100 per ton. It has been steadily increasing in width, and in the drift is quite flat. For the last 100 feet, the bottom of the drift has been on the foot-wall and the top on the hanging-wall, and the drift was high enough for a tall man to walk erect in, and constantly widening. A good deal of significance is given to the fact that this body of ore adjoins the Tioga and Bechtel mines on the north. Cross-cutting on the 700 level is progressing with the best of indications—stringers of quartz rich in gold coming in, and the

general formation favorable for a ledge at no distant day. Work is doing systematically at so many different points that it is impossible to give a detailed description in a general review of the district. It is safe to say that the mine is opened four years ahead, based on present milling facilities, and this pertains to that portion of the mine above the 400 level alone."

The recent strike on the 350-foot level of the Tioga mine has improved beyond expectation, especially at the north. The Noonday mine shows good ore in the north drift, on the 200-foot level, which is now in 195 feet. The joint shaft on the line of the North Noonday is down 83 feet. Machinery for the same is now on the ground. There is ore enough to keep the miners' mill running all the time. The lawsuit of this company has been decided in its favor. The *Chronicle* of May 24th says there is considerable interest in the work going forward on the 306 and 433-foot levels of the Bodie mine. The principal operations are centered at the location east of the main shaft, on ground entirely new with respect to the bonanza encountered last year. The water has considerably decreased in this mine, and it is not improbable that 100 or even more feet in depth can be reached before additional pumping machinery is required. The joint cross-cut on the 400 level, Mono line, conducted by the latter company, is now in over 200 feet. Pumping machinery is on the way, with capacity to sink 200 feet deeper.

From the *Foothill Tidings* of recent dates we take the following :

"The hydraulic mining companies will have a long season of washing, as the water supply is abundant.

"A good clean-up of quartz from the New Rocky Bar has been made. The amount crushed was 135 loads, which yielded $35 per load, not including the sulphurets, which, according to their assay value, will run up the total yield to $40 per load.

"The case of the Rising Star and Eclipse mining claims *vs.* the B. M. Ex. mining claim which has been pending in the Land Office at Washington for a long time, on an appeal from the decision of the Sacramento Land Office, has been decided in favor of the B. M. Ex. Company, and the adverse claim dismissed.

"The Planet Gravel Mining Company has levied an assessment of two cents per share upon the capital stock, amounting to $1000. Now that the location of the pay channel has been definitely ascertained, the stockholders will probably receive their money back with interest.

"The ledge in the Live Yankee is widening out and growing richer.

"The Merrifield mine is an established success. The buildings, machinery, and underground workings are in splendid condition. The ore-body continues to improve in size and richness. Two clean-ups have been made within the past 30 days, the last of which amounted to nearly $5000.

"The Smith mine at the Half Mile House is getting into first-class shape, and a recent crushing of ore gave good returns.

"The Derbec gravel mine has started up again, with miners' wages at the old price, $3 per day.

"At the El Capitan mine, Gold Flat, a small force of men are now at work sinking and timbering the incline. The ledge improves with every foot it is sunk on.

"The Knight of Malta shaft is 114 feet deep, and will be pushed with all possible speed to the 200-foot level, when regular drifting will be commenced.

"The mining season, so far, at Dutch Flat has been quite satisfactory, and the owners of all old mines in the section feel encouraged.

"The Godfrey mine, Alta Hill, is one of the most important among the list of the mining enterprises of this district, though little is said about it. Giving employment to about forty men, it has for years, under the careful management of Captain Godfrey, gone on the quiet tenor of its way, contributing $2000 to $2500 monthly to the circulating medium of our town.

"The yield of the Idaho mine for the month of April was $46,869, and the regular monthly dividend, which was declared on the first Monday of the present month, was $3 per share, aggregating $9300. This makes the 117th regular dividend paid by the mine, or a total of dividends during the life of the mine of $2,743,050, out of a yield of $5,418,659. Ore is now being extracted from five levels of the mine, namely, the 7th, 8th, 9th, 10th, and 11th.

"Work on the new air-shaft is proceeding as rapidly as possible. About 200 feet of ground have yet to be opened through. When completed, this air-shaft will give good ventilation from the tenth level to the surface. A drift is now being opened in the new incline of this mine 180 feet below the tenth level, or 1180 feet below the surface. After this is fairly under way, the work of sinking the incline deeper will be resumed.

"The Argenta mine has struck good pay-ore.

"Some of the machinery to be used on the Schmidt mine has been put in place, and work is being pushed rapidly ahead so as to get the mine in running order as soon as possible.

"In the Scadden Flat mine, the ledge is strong, being from 18 inches to 2 feet in width. The general appearance of the mine is good. Recently there has been some very rich specimen rock taken out by tributers. There are between fifty and sixty men working about the mine.

"The new shaft of the Rocky Bar is 120 perpendicular, and is extended 70 feet below that on the incline. The ledge is not large but of excellent quality, paying $35 per load.

"In the Centennial, the ledge is showing an average width of 6 inches, which is a good size for this mine. The rock taken from the mine has been almost uniformly rich, and from a clean-up of 43 loads, completed at Smith's Orleans mill, on Friday, $4300 was obtained, without including the sulphurets, which will go several hundreds more.

"Washington is timbering the new shaft, and building a new forty-foot water-wheel to run the pump. Regular mining work to be resumed when those improvements are finished.

"The Hathaway gravel claim, situated on Scotchman's Creek, near Washington, is prospering. They have about 4000 inches of water, with a fall of 350 feet. Eight white men are regularly employed, and thirty Chinamen are working by contract.

"At King's Hill, work is progressing as usual, and the mine reported looking well. No recent clean-up has been made. The last crushing was a very profitable one to the lessees. The ledge has lately opened up splendidly on the south drift of the 250 level.

"Of late, the ledge in the New York Hill has increased in size, more men have been put to work, and every thing is said to look quite favorable.

"A handsome bar of gold, the result of a recent clean-up at the Thomas mine, valued at $1600, was sent below this week.

"Work on the Cold Spring gravel mine, northeast of Nevada City, progresses as usual. The tunnel is being pushed ahead energetically."

The *Mining and Scientific Press* of May 24th says that the ore shipments from the copper mines of Spencerville, Nevada County, aggregate about $9000 per month ; ore carries 30 per cent of copper. An increase of activity is also noted in the copper mines of Calaveras and Del Norte. In Eastern Arizona, copper mining has been pushed with great vigor ; they will undoubtedly command large success.

COLORADO.

Kokomo is becoming quite a city, and building is progressing very rapidly. Four saw-mills fail to supply the demand for lumber, which is selling at $40 to $50 per thousand. Machinery for a smelter is now at Webster, awaiting the opening of the Ten-Mile toll-road.

A correspondent of the Denver *Tribune* says :

"The pioneer mines, the Wheel of Fortune, Undine, and Smuggler on Sheep Mountain, mines which in themselves would warrant the location here of three smelters, prove worthy of their repute. They have but scratched the ground, aking out only the ore necessary to drive their drifts, which increase in richness and extent as developed. With ten feet of mineral in the Wheel of Fortune and eight in the latter mines, their slopes untouched and their net mill returns at Leadville (after deducting heavy freight charges) running from 200 to 300 ounces, we have a nucleus around which such mines as the Ruby, Chelsea Beach, Star of the West, Big Giant, and Silver Tip, and a dozen others may well cluster. Of equal promise but younger growth, and necessarily not so extensively developed, some of them bid fair to outstrip their elder sisters. The Big Giant, with ore running from five hundred to two thousand ounces, next to and on the same contact with the Silver Tip, bids fair to come to the front as among the richest mines on record.

"On Elk Mountain, directly behind the city, if appearances can be relied upon, there exists one of the largest bodies of mineral ever yet uncovered in this district. Shafts sunk on successive claims show bodies of ore from six to ten feet in thickness, of good quality, but not so high in silver as those on Sheep Mountain. The supply of smelting ore from this source alone seems almost inexhaustible. Here the Climax, After Math, and White Quail lead the van of a dozen claims of almost equal promise. Jack and Red Mountains, only just begun to be prospected with results equally promising, and ores from the Rising Sun and Addey mines, assay over three hundred ounces. Nor is the city of Kokomo a mean exponent of the mineral wealth that surrounds it. Here in the center of the city has been discovered one of the most prominent mines in the district. The workmen, while grading a lot for Captain Ware, struck, some time since, a blind lode, a true fissure-vein, which showed mineral from the grass roots. A crevice of four feet promises one of the strongest lodes yet struck. Assays from this mine, the Jennie W., have run well up in the hundreds; its convenient location in the rear and under one of the finest buildings in town, makes it a center of attraction, and its owner only awaits the abatement of surface water from melting snow to fully develop it.

"Under contract for its completion in two weeks, Kokomo is looking forward with impatience for the completion of the stage-road which will place it in close connection with Denver, Georgetown, Webster, and Breckenridge. This road once completed, it will then be distant from Denver but about eighty-five miles; from Webster, the present terminus of the South Park road, but forty-three miles, and, for a time, at least, the shortest and most direct line to Leadville, and through one of the richest and most picturesque sections of Colorado."

Rich placer diggings on the Big Laramie are reported to be discovered. The gold is fine and only a small proportion of it saved. A four-foot vein of 200 ounce carbonates is reported to have been struck at the south end of the North Park.

The Aldelphi mine in San Juan is reported to have taken out 90 tons of ore during the winter which will run from 150 to 600 ozs. of silver per ton. The shaft is down 75 feet. The mineral streak shows five feet.

The Gunnison District continues to give much promise. A two-and-a-half-foot quartz vein has been discovered, giving an assay of $3400 per ton at ten feet from the surface. The population is rapidly increasing, the Cottonwood road being open. The prospects are favorable to active building operations. A new paper is to be started at Hillerton, also a bank. Building lots have advanced to $100 each.

The leading producing and paying mines at Silver Cliff are the Racine Boy, the Horn-Silver, the Plata Verde, the Domingo, and the Johnnie Bull. Several others are shipping ore in paying quantities, though not so much as those mentioned. Three new smelters are promised in this camp, ground having been broken for them.

The Golden Age mine at Jamestown, in Boulder County, is reported to have been sold to gentlemen in Chicago for $194,000. The Denver *Tribune* says it is one of the most promising mines in the State.

The late forest fires surrounding Leadville have destroyed much valuable timber. Prospecting is being carried on very energetically. The Pendry mine on Carbonate Hill, which made a strike a few weeks ago, gives great promise. The cost of smelting has been reduced, but there is an inclination to hold the ore for a still greater reduction in this item, which will come about with the advance of the railroads and cheaper transportation on fuel supplies and bullion.

The shaft of the Boulder Nest is 340 feet deep, the lowest level being 325 feet from the surface. The new hoisting works are now on the ground, and will soon be erected. On the first level, which is 105 feet from the surface, a new strike has lately been made. About 25 men are now employed in and around the mine. But little ore has been taken out lately on account of the retimbering of the shafts.

The Boulder *News* of May 30th says : "Mr. R. G. Dunn, President of the No Name and Sherman Mining Company, has visited the mines and proposes to resume operations, work having been discontinued about three years ago. The Monitor mine has been started, and is working 8 men. It is reported that half of the Washington Avenue mine has been sold for $300,000. The Native Silver mine is still in good pay, though the water is quite troublesome. Very encouraging discoveries of carbonate ore are reported to have been made near Breckenridge. It is said that J. K. Gooding has three smelters which he will remove to Breckenridge to be more convenient to most of the mines, and he will then be prepared to buy the ore."

We take the following from the Silver Cliff *Miner* :

"Several new strikes are reported in the Sangre de Cristo. The St. Joseph smelting works are nearing completion. Henry C. Blanchard, an ex-preacher from Oswego, Kan., last Monday struck a two-foot vein of galena at a depth of five feet. The above property is located in Johnson's Gulch, about seven miles north of town on the Pueblo road. The new sampling mill of the Silver Cliff Milling Company is rapidly nearing completion, and will be in full blast again, within 30 days. Wm. Dunkin, proprietor of the Lady Franklin mine, situated this side of the Johnny Bull, is shipping ore daily. The shaft is 40 feet deep and runs from 40 to 210 ounces. Mr. Nathan Randall, of Leadville, who has been spending a few days in our city, left for home yesterday. He will return with a 30-ton smelter, which he will put up on Grape Creek, near Dora. Milo H. Parsons, of Brooklyn, N.Y., has purchased the controlling interest in the Julian, Justice, Moose, and Argo mines, of Geo. B. McAulay. The Julian mine has been prospected to the depth of 48 feet, and found to improve as depth is gained. These mines are all near the Racine Boy and King of the Valley, and have the same surface ore. The Julian mine has several hundred tons on the dump that would pay a margin now, were the proper machinery here to treat it. It was rumored that Messrs. Mow, High & Co. had bonded the Ironton lode for $60,000. The Montrose, another mine near the Johnny Bull, has a ten-inch vein of galena that assays 60 ounces. Depth, 40 feet."

DAKOTA.

THE BLACK HILLS.

From our recent Black Hills exchanges we take the following notes :

"In Rochford every thing is booming, and the prospects for a first-class camp are very propitious. All the mines are being worked, and rich discoveries made almost daily. The Manville mill has been running on Evangeline No. 1 ore for two weeks, and a good clean-up is looked for. The Homestake silver mine, on Rapid Creek, is looking exceedingly good. A body of ore has been struck that assays very high.

"The Dakota Central Railroad Company has filed articles of incorporation with the Treasurer of the Territory. The organization is part of the Chicago & Northwestern Railroad Company. Its object is to extend a line of road from Tracy, Minn., to the Missouri River, near Ft. Pierre, in Dakota, which will bring the Chicago & Northwestern seventy-five miles nearer the Black Hills than any other road now contemplated or contracted.

"The Floorman mine, at Galena, is working more men than heretofore, and

is in ore far richer and more of it than any before struck. A shaft has been sunk six hundred feet from the first workings, in the tunnel.

"Work is soon to commence on Mineral Hill, on the El Refugio mine.

"Cunningham's mill is running on Great Eastern ore.

"Bogle's mill started 20 additional stamps on May 28th, on Rhoderic Dhu and Golden Terra ore.

"A large and very rich vein of ore has been struck on the Utah lode, situated between the Cheyenne and Hoodlebug mines.

"The Bingham mine has been partially prospected, and shows an extensive body of high-grade ore. It is situated northwest of the Utah."

The *Herald* of May 25th says:

"The segregation of the Golden Gate and Justice mines, from the original De Smet purchase, and the stocking of the same puts Central and Golden in the lead in the Black Hills so far as valuable mines are concerned.

"The regularly stocked mines now are the Father De Smet, Caledonia, Roderick Dhu, Cheyenne, Golden Eagle, Great Eastern, and—counting the Terraville mines—the Golden Terra, Gopher Consolidated, and Clara Consolidated, nine in all. To these will soon be added the Justice, Golden Gate, Hoodlebug, Sams, Aurora, Erin, Pewabic, and possibly the Homestake Company's Buckeye West. Here are seventeen mines all in sight of the De Smet, and on the main gold belt of the Black Hills.

"Three and possibly four large mills will be built this summer and fall, and the impetus thus given to all kinds of business is certain to push these towns, two only in name, rapidly to the front."

IDAHO.

THE BLACK JACK MINE.

From the Silver City *Avalanche* of May 24th we condense as follows:

"Some fifty men are being employed at this mine, and the ore continues to look well. A considerable quantity of ore is being shipped. A large quantity of ore from the Owyhee mine has been crushed in an arastra. The Knotts mine shaft is being sunk to intersect the tunnel, and considerable ore has been forwarded to the mill. During the past week, nearly 100 tons of ore from the Sierra Nevada mine have been crushed at Leonard's mill; the ore from the Lone Tree Gold mine, located on Florida Mountain, is liberally streaked with gold, and the owners expect to soon commence operations here on a large scale. On the whole, the outlook in the mines in Alturas, Boise, Owyhee, and Lemhi is very favorable. New mines are being opened up and considerable capital is going into them. A limited number of men, so we are informed, are working on tribute in the Virtue mine of Eastern Oregon.

NEVADA.

THE RICHMOND CONSOLIDATED MINING COMPANY—ANNUAL REPORT.

We are indebted to the London *Mining Journal* of May 24th for the following abstract of the report of the directors, which was prepared to be presented at the meeting of the shareholders held on the 4th of June. From the statements submitted, the mining profit for the year showed a total of £130,989 17s. 10d., and the net profit £127,023, this profit being the result of eight months' smelting. The undivided profit for the previous year was £77,472, which gives the directors a total of £204,496. The dividends declared were equal to 57½ per cent per annum. Disbursements amounted to £155,250. The ore product of the year amounted to 33,626 tons. The total amount smelted was 37,333 tons, yielding, with 115 tons of *débris* from the furnace-bottoms, after the fire, 35,000 ounces of gold, 930,255 ounces of silver, and 7652 tons of lead. The Richmond ore averaged $76.84 per ton, and the purchase ore $59.38 per ton. The gold, silver, and lead sold during the year realized £523,032; the mining and hauling expenses, including dead-work, were $11.88 per ton of Richmond ore that was smelted, as compared with $10.73 in the previous year. The smelting expenses on 37,437 tons of ore, including labor, fuel, stores, and renewals, were $14.29 per ton, as against $14.18 in the previous year on 25,696 tons. The saving to the company in refining its own bullion is intimated to have yielded a profit to the company of £20,000. The two new furnaces are now smelting about 1000 tons of ore per week. Large bodies of ore were opened up on or about the fifth level, which have since developed into two large chambers, known as Number 11 and Number 12, and the grade of ore improving; a connection (in ore) has been ascertained to exist between Number 7 chamber and Number 11 chamber—a most important discovery, and in following down to the bottom of chamber Number 8, it opened out again into a fine body of carbonate, which seemed to run flat, forming a floor midway between the fourth and fifth levels, and immediately beneath a large natural cavern which has been discovered in stoping a part of Number 11 chamber. The main ore-body is steadily making up above a fault, and the developments in the mine are said to be in a satisfactory and promising condition.

EBERHARDT AND AURORA MINES.

The *Mining World and Engineering Record* of May 24th publishes the directors' statement of accounts of this company for the year ending December 31st, 1878, from which we make the following extracts: Regretting the loss shown, the board advise the prosecution of work on the North Aurora mine, as very favorable indications of the presence of high-grade ore exist there. The work was suspended, owing to the limited funds placed at the directors' disposal, which were entirely devoted to running a drift through the Eberhardt mine, which, by the present time, has been run upward of 755 feet, leaving but 300 feet drifting to reach the point 900 feet vertically under the deepest Eberhardt workings. The company has secured funds for this purpose, and it recommends that the unissued balance of 20,000 debentures authorized, amounting to £8800, shall be subscribed for, and the money so raised devoted to the original tunnel.

THE LOW-GRADE ORES OF THE COMSTOCK.

The Reno *Journal* says: "Upon the Comstock are millions of tons of ore which can not be milled and made to yield a profit over the $9 now charged for reduction. But there is no good reason why that ore could not be worked and pay a profit over $5. And all the low-grade ore on the Comstock can be brought to Reno over the V. & T. RR., and reduced by the water-power of the Truckee at not to exceed $4 or $5 per ton. The V. & T. RR. officers have often asserted that they would be glad to bring the ore down here for $1.50 per ton, and we believe arrangements could be made for the transportation of large quantities at as low a rate as $1. This ore is now dumped away; the State is loser. Many a mine that is now assessed could go along prospecting on the difference between $5 and $9."

THE COMSTOCK.

The Gold Hill *News* of May 28th summarizes the position on the Comstock, from which we condense as follows:

"There has been little change in the real situation here during the past week, and what little there has been is in the line of a general advance by the mines. Perhaps the most noticeable and important of these is in the stopes of the Sierra Nevada as they make west and toward Union ground. This has been responded to by the market in a more liberal advance in the prices of Union securities than in those of Sierra Nevada.

"One alleged reason why Sierra Nevada has not kept pace with its neighbor in this advance has been the rumored forthcoming suit by the Scorpion to get possession of the Sierra Nevada bonanza. This, however, should have operated equally on Union securities, for the intention is said to be to bring a suit against Union also. These companies, however, do not fear the result. The Scorpion laid its location on a line of croppings which are entirely distinct from those which belong to the Sierra Nevada and Union, and has secured its patent accordingly.

"The Sierra Nevada has followed its ledge from its croppings to this body of ore. Let the Scorpion do the same, and then it may have some grounds for laying claim to this bonanza."

THE SUTRO TUNNEL.

The Sutro *Independent* of the 29th ult. says that the sub-drain will be completed by the 20th of the present month.

The work of excavating is being prosecuted clear up to the Savage connection, and 600 feet of double boxes are being put in daily. Over 13,000 feet of the sub-drain completed.

After the drain is finished, and the boxes laid, it is proposed to immediately begin to run two drifts—one to the Yellow Jacket and the other to the North Consolidated Virginia mine.

It is thought that the water from the flooded mines will be flowing through the tunnel by the 4th of July.

NEW MEXICO.

The Denver *Tribune* has the following recent information from the new Carbonate District:

"Some 150 men are now busily engaged in sinking shafts and otherwise developing the newly-discovered Carbonate District, situated from 18 to 20 miles southeast of Santa Fé, and others are arriving daily. Suitable machinery for separating and extracting the ores has been ordered and is on the way, the arrival and placing of which is looked forward to very anxiously, as a new impetus will be added to the labor, and miners can then know more certainly what they are doing. The carbonates already taken out assay from $50 to $200 silver to the ton. Some of the more sanguine say that although this new district may not be quite so extensive as the Leadville, it compares very favorably in richness.

"Santa Fé, the ancient and quiet capital city, is improving in population and business by reason of its nearness to the mines and the nearer approach of direct railroad communication.

"Affairs on the southwestern border of New Mexico are reported as not altogether as tranquil as could be desired; but the recent indictment of a few score of the disturbers of the public peace in one of the most afflicted counties has induced a change—for the better."

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus, and the treating of Precious Metals, etc., from *The Official Gazette of the United States Patent Office*, for the week ending May 27th, 1879:

No. of Patent.	Title of Invention.	Name of Inventor.	Residence.
215,717	Rotary-Engine	Robert Campbell	Allegheny, Pa.
215,726	Furnace for Reducing Oxide Ores	Charles M. Dupuy	Philadelphia, Pa.
215,733	Electric Candles	Jim B. Fuller	Brooklyn, N. Y.
215,737	Pump	Cassius G. Grove	Mt. Pleasant, Mich.
215,749	Surveying-Instrument	Ira Humphrey (a)	Boston, Mass.
215,756	Process and Apparatus for Distilling Petroleum	Joseph L. Kirk	Pittsburg, Pa.
215,797	Valve-Gear for Steam-Engines	George H. Corliss	Providence, R. I.
215,798	Tubular Steam-Boiler	" "	" "
215,799	Compound Steam-Engine	" "	" "
215,800	Pump-Valve	" "	" "
215,801	Pump-Plunger	" "	" "
215,802	Steam Pumping-Engine	" "	" "
215,803	Pumping-Engine	" "	" "
215,804	" "	" "	" "
215,805	Fly-Wheel	" "	" "
215,806	Exhaust-Valve for Steam-Engines	" "	" "
215,807	Cylinder for Steam-Engines	" "	" "
215,808	Beam for Steam-Engines	" "	" "
215,821	Injector and Ejector	John H. Irwin	Philadelphia, Pa.
215,826	Scale-Beam	John R. Linen	Buffalo, N. Y.
215,877	Revolving Ore-Roaster	David W. Brunton	Silver Peak, Nev.
215,902	Hydro-Pneumatic Engine	Clark Fisher	Trenton, N. J.
215,906	Injector	Louis B. Fulton	Pittsburg, Pa.
215,910	Electric Lamp	William Gilman	Chicago, Ill.
215,912	Ore Pulverizer and Separator	Alexander Goodhart	Carlisle, Pa.
215,949	Apparatus for the Production of Illuminating-Gas	Charles Marchand	Paris, France.
215,951	Submerged Pump	John M. May	Cedar Rapids, Ia.
215,966	Ore-Pulverizer	Ira M. Phelps (b)	Philadelphia, Pa.
215,967	" "	" " (b)	" "
215,968	Quartz-Crusher	" " (b)	" "
215,969	Sublimating Apparatus	" " (b)	" "
215,970	Amalgamator	" " (b)	" "
215,971	Desulphurizer	" " (b)	" "
215,980	Cam for Stamp-Mills	James Scott	Denver, Colo.

(a) Assignor of one half his right to John L. Gardiner, same place.
(b) " " " " " John Shillito, Jr., Cincinnati, O.

PROPOSALS.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received:

Bridge; James W. Lawson, New Hamburg, N. Y.	June 10, 1879.
Bridges; two wrought-iron bridges over the hydraulic canal, village of Niagara Falls; Benj. Rhodes, Engineer, Niagara Falls, N. Y.	" " "
Fire-Alarm Telegraph; C. L. Maxwell, City Clerk, Xenia, O.	" " "
Hollow Tiles for Reconstruction of U. S. Patent Office; Adolph Claus, Engineer, Washington, D. C.	" 11, "
Convict Labor; James Shevlin, Keeper of Kings County Penitentiary	" " "
Bridge, iron, 65-foot span; L. C. Wright, Troy, Lincoln County, Mo.	" 12, "
Building New Story under City Hall; George I. Vincent, Somerville, Mass.	" " "
Dredging; B. F. Morse, City Engineer, Cleveland, O.	" " "
Bridges; E. Kiesewetter, Auditor, Columbus, O.	" 13, "
Bridge, iron; C. H. Hooper, Belle Plain, Minn.	" 15, "
Jail; Wm. Kennedy, Stephensville, Tex.	" 16, "
Bridge; W. K. Sproule, Auditor, Indianapolis, Ind.	" " "
Construction of Officers' Quarters, Sackett's Harbor, N. Y.; Alex. J. Perry, Dep. Quartermaster-General, Department of the East, Governor's Island.	" " "
Wrapping-Paper, Letter-Scales, etc.; D. M. Key, Postmaster-General, Washington, D. C.	" 19, "
Ice Harbor, near Cincinnati; William E. Merrill, Major of Engineers, Cincinnati, O.	" 20, "
Iron Work for New City Prison; James Corbin, Columbus, O.	" 23, "
Jail Construction of Stone; A. W. Brown, Morgantown, W. Va.	" " "
Building; Edwin Knowles, Osawatomie, Kan.	" 25, "
Repair of Pier at Fairport Harbor, O.; John M. Wilson, Major of Engineers, Cleveland, O.	" 26, "
Ohio River Improvement; John M. Wilson, Cleveland, O.	" 27, "
Designs for Pumping-Machinery, for which premiums will be paid, as follows: 1st best design, $500; 2d best, $300; 3d best, $200; W. E. Cutshaw, City Engineer, Richmond, Va.	July 1, "
Street Railroad, Maintaining and Operating the same; William G. Bishop, City Clerk, Brooklyn, N. Y.	" 3, "
100,000 tons of Steel Rails to be Manufactured in New Zealand; John Knowles, Under Secretary for Public Works, Wellington, New Zealand.	Sept. 30, "
Railroad Work, Minneapolis, Minn., 250 miles; W. W. Eastman	

50 miles Heavy Rock Grading on Georgian Bay. Apply to Smith & Ripley, Collingwood, Ontario.

THE COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 6, 1879.

Anthracite.

Advanced price-lists have been the order of the day. The Pennsylvania Coal Company has not, however, made any change yet, although it is thought that it will on the 10th inst. The result has naturally been to check the demand from those who have advanced prices, and, as a consequence, such are complaining of a small demand, although feeling very comfortable, owing to business previously booked. On the other side, those who have not advanced prices, or have made but a slight advance, report a very active business. There has been, and there is still, considerable cheap coal in the market. Coal purchased at the last auction sale has been sold at the average prices of that sale, up to an advance of 5c. per ton. Those who have advanced prices believe that the cheap coal will soon be disposed of, and that there will be a better chance of obtaining the higher rates. It has been the expectation, and will probably be a fact, that July, at least, will be a dull month. As buyers have liberal supplies for all early requirements, the advance in prices will tend to intensify the depression. To remedy this, the question of a stoppage in July is being discussed with some prospects of its adoption. Mr. Gowen objects to this, having promised his men steady work, and believing that every ton of coal that can be raised this year will be required. It may be possible that a stoppage will reduce the year's supply to less than the demand, yet without it, it will be found very difficult, if not impossible, to enforce an advance in prices until August or December. It is very evident that the capacity of the mines are not nearly what has been represented by many. It is now the most favorable time in the year to operate the mines and breakers; every man is being employed and every thing possible being done to force coal on the market, and yet the production is not large. The demand for miners is very great, there seeming to be a general scarcity. The local labor troubles do not appear to spread, yet there is a general feeling that the men must be handled as carefully as a keg of powder. The one objection to a stoppage is, that when the companies become ready to resume operations, the miners might not respond except at an advance.

As an evidence of the low prices which exist in some instances, we quote the following bids, which were opened by the post-office authorities of this city, for supplying that department with 4500 tons of Lehigh broken, delivered in bins and trimmed at the post-office in gross tons, as may be required during the coming twelve months; Packer & Knowlton, $3.49 per ton for Spring Mountain; Nathan & Co., $3.73; Barber, $4.35; Communipaw Co., $3.90; James P. Dick & Co., $3.85.

Our Philadelphia correspondent, under date of June 5th, says:

"The trade continues moving here very satisfactorily except as to prices, which are still too low to leave a profit to transporters and producers. There is not the same anxiety to have coal shipped promptly to avoid an advance as there was last week, and this gives the impression to some that the trade is dull. It will take a while yet for some buyers to realize that the advance is to be paid. There is great doubt yet in the mind of the most competent about further advances in July and August being carried out successfully without some stoppage during mid-summer. It is believed that a couple of weeks' stoppage in each July and August would secure a very active fall trade, and that although the amount produced during these two months without any interruption might not be too large in the aggregate, it will be too much at that particular time.

"Vessels remain scarce and freights stiff at previous quotations. June month is one during which vessels are generally quite plenty. The expectations of low freights by Eastern buyers are not realized, and are not likely to be this season."

A dispatch from Philadelphia, dated yesterday, says:

"The Lehigh Coal and Navigation Company gives notice that on and after Monday next the rates of toll on the Lehigh and Delaware Division canals to Philadelphia and points beyond will be advanced 10 cents per ton, making the rate of transportation to this city $1.35 per ton. A similar advance is expected on the Schuylkill Canal. The stock of coal at Port Richmond is now lower than at any time for a year past. The quantity is only 25,000 tons, all of which, excepting 1200 tons of lump and steamboat coal, is sold. The orders for the present month will consume the entire production. It is proposed to advance the railroad tolls in July."

Bituminous.

This class of coals shows the same dull and insipid business that has characterized it for weeks. Prices are low and business is interfered with by the still lower prices of anthracite coal. We are inclined to think, however, that a better business awaits these coals in the fall than many suppose.

We publish the following letters from our regular correspondents. Prices are given in another column:

"BUFFALO, N. Y., June 3, 1879.

"The low prices at the West have stimulated a demand considerably beyond the expectations of any one. As a consequence, all shippers find their order-books crowded with orders, which they can not hope to see filled before August.

"There are only a few buyers now in the market, most of them having made purchases for their immediate wants early in May. The unfortunate buyers who held off too long are now in distress to find sellers utterly indifferent toward them or positively refusing to accept their orders at all until old ones are filled, or, if accepting them, doing so at an advance of 25 cents a ton above figures which they were freely quoting and anxious to sell at less than four weeks ago. Different shippers and companies adopt one of the several modes of treatment above indicated.

"The market, then, is decidedly improved here and hereabouts, and a general advance is assured, and has already been ordered by some of the companies. In conclusion, it is quite refreshing to see anthracite a really *desirable* thing again, and to be able to stand erect before buyers with some independence, although it must be confessed that prices at which all have felt obliged to sell have a tendency to make one feel somewhat humble."

"BUFFALO, N. Y., June 3, 1879.

"Wholesale and retail prices advanced yesterday 25c. per ton.

"It is known prices quoted are not adhered to, and no one expects them to be, as there is no agreement to abide by them, and further, there is no sense in making the price the same for all sizes. Those having an accumulation of large sizes will maintain a difference between them and the small sizes."

"CHICAGO, ILL., June 4, 1879.

"The prices of anthracite coal in this market remain without change. Large sales have been made the past month both to the city and country trade, and at prices shockingly low. At this writing there is far less disposition to slaughter coal, and we hear of an effort to advance prices, but think it can not, or rather will not, be done at present. The receipts of coal by lake and by cars are quite light. Nothing new in bituminous coal, and not much doing in the way of receipts or sales."

CINCINNATI, May 31, 1879.

"Since our last report, we have received no coal from Pittsburg by river, and the stock of Youghiogheny has been reduced to smaller proportions than has been known for years. If it were not for Kanawha River coal and the supplies brought in by the railroads, we should be in a destitute state. As it is, other coals have been forced into the place of the Youghiogheny, and the consumers still enjoy the luxury of cheap coal.

"Competition among dealers has been changed from Youghiogheny to anthracite coal. Shippers have depressed the prices on track to $3.75@$4.00 for all sizes, for May and June delivery; this has enabled dealers to bear the prices to consumers down to $4.50@$5 per ton of 2000 lbs.; Lehigh, $1 per ton more."

"CLEVELAND, O., June 2, 1879.

"Prices are irregular and weak, with a large demand for soft coal for shipment.

"Hard coal has been sold and delivered as low as $3.50 per ton, in five to ten-ton lots, though the lowest quotations made by the anthracite companies are $3.30, on track, and, for stove size, $3.45. The low prices will stimulate consumption of anthracite largely in this market."

"LOUISVILLE, KY., June 4, 1879.

"The coal in river is very scarce, and will sell at 9c. if no water in say ten days. Business is very dull."

"MONTREAL, June 2, 1879.

"Our market has remained quiet with a slight increase in price of hard coal. Scotch steam coal is firm, as all the coal now arriving has been sold, but any quantity thrown on the market would depress the price."

"NEW ORLEANS, June 2, 1879.

"The coal market continues quiet, with no change in quotations excepting the wholesale rate: Pittsburg selling at 32½c. to 35c. by boat-load.

"Demand fair. Stock small, compared with that of same time last year, when there were some 253 boats on hand.

"Coal on hand June 1st: 95 boats and 1 barge Pittsburg coal, 1 boat St. Bernard coal. Consumption during May: 25 boats and 1 barge Pittsburg coal, 1 boat St. Bernard coal.

"Arrivals: 8 boats Pittsburg and 2 boats St. Bernard coal."

Pittsburg. June 5, 1879.

COAL.—No freshet—no navigation yet for loaded coal craft—consequently there is no change within the past week in the situation of this industry. Large tracts on the bosoms of the Monongahela and the Ohio, in this vicinage, still present the black surfaces of expanded fleets, deeply laden, awaiting the needed depth of water on which to descend to the lower markets. Altogether, there are on board here, according to the estimate of one of the oldest and most experienced operators in this district, about 10,000,000 bushels (392,011 tons) first-class lump coal, and about 5,000,000 bushels slack and coke, making in all 15,000,000 bushels (588,016 tons) now loaded and prepared to start down the river. For several years past, the average quantity of coal shipped below, during the first six months of each year, has been from 35 to 40,000,000 bushels. This year there is a falling off of from 15 to 18,000,000 bushels, after adding all now on board to the shipments of the first half of the current year. That such a market deficiency has occasioned no special scarcity is undoubtedly owing to the increase of coal sent from the regions of West Virginia, Ohio, etc. It is true that prices have been affected to some extent by the non-arrival of the usual supplies of Pittsburg coal; but that is mainly owing to its being wanted for uses to which it is better adapted than any of the competing coals. For ordinary domestic purposes and for steam generating, the lower coals fill all necessary requirements; so that the rise in prices is confined to the products of this region. Our quotations show all the changes that have taken place, and these are not likely to last longer than the arrival of the supplies now ready on hand:

PRICES AT PITTSBURG.			
Wholesale, on board	4	cts. per bushel.	$1.06 per ton.
Retail, delivered	6@7	cts. "	1.85 "
AT CINCINNATI.			
Wholesale, on board	8	cts. per bushel	$2.12 per ton.
Retail, delivered	9	cts. "	2.38 "
AT LOUISVILLE.			
Wholesale, on board	8	cts. per bushel	$2.12 per ton.
Retail, delivered	9	cts. "	2.38 "
AT NEW ORLEANS.			
Wholesale, on board	35	cts. per barrel	$4.38 per ton.
Retail, delivered	45	cts. "	4.35 "

Bushels are rated among dealers here at 76 lbs.—26⅓ bushels make a ton of 2000 lbs. nearly.

The barrel that rules the coal measurement in New Orleans contains 24-7 bushels of 80 lbs. each, making about 200 lbs. Nine and two thirds of these barrels weigh a ton, within a small fraction.

COKE.—Nothing disturbs the settled tranquillity with which this heavy industry moves onward. Supply and demand meet each other with wonderful exactness in a manufacture of 30,000 tons a week. There has been some change of consumers. Failures have occurred; but these have all been made up by the growing use of coke among the anthracite works. Quotations are without change—$1.15 to $1.30 per ton of 2000 lbs. on board cars at ovens.—*American Manufacturer.*

San Francisco. May 28, 1879.

COAL.—Imports from January 1st to May 1st:

	Tons.		Tons.
Anthracite	3,268	Cumberland	887
Australian	4,478	Seattle	49,003
Coos Bay	13,290	Tacoma	845
Carbondale	746	Vancouver Island	50,674
Carmel Bay	270		

We are informed that the railroad companies have made a contract with the Seattle company for 5000 tons monthly at $5.50. This is the lowest figure yet reached. The California Mt. Diablo Company sell their steam product at $4@$4.50 for fine and coarse respectively, for large parcels. We can not quote Coos Bay better than $5.50; Nanaimo, cargo price, $6; Wellington, $8; Sydney Steam, $6@$7; Wallsend, $7.50@$8; anthracite, $8.50@$9. There is no Scotch or English here. The St. Nicholas, from New York, brought 400 tons; Great Western, 2200 tons Seattle; Majestic, 1900 tons, and Gem of the Ocean, 1030 tons same. The Belvidere, from Nanaimo, brought 2065 tons, and the Revere, 1210 tons Wellington. One of our railroad companies has extended its contracts for another month for Wallsend coal at $7.25.—*Commercial Herald.*

THE COAL TRADE FROM A PHILADELPHIA STAND-POINT.

The following are the views of the Philadelphia *Ledger* on the coal trade:

"So far as we have been able to ascertain, the difficulties in the way of securing increased prices by the coöperation of the several companies who are so deeply interested in the matter are principally due to an honest difference of opinion as to the condition of the trade and the

manner in which it should be conducted. In the first place, the Scranton auction sales are considered by many, and especially by some of the New York companies, as being insuperable obstacles in the way of obtaining higher prices for coal. The opponents of these sales reason, apparently with some justice, that in the depressed condition of the market any attempt to sell coal by auction necessarily involves a slaughter of prices. On the other hand, the Delaware, Lackawanna & Western Railroad Company, and some few others who see no absolute objection to the auction sales, say that if the sale was conducted as it used to be in past years, and left alone by the other companies, it would do no injury whatever, but, on the contrary, possibly be a sort of barometer to record the rise in prices that is sure to be obtained by natural causes in the near future; but that, as several companies have of late months been in the habit of notifying their customers by letter and circular that, no matter what the prices realized at the Scranton sale may be, their own coal will be furnished at the same price, the effect is that, instead of its being a sale of 100,000 tons a month (which is about five per cent of the monthly product), it is really a sale of six or eight hundred thousand tons, and this great evil is further magnified by keeping from the sale a large number of persons who might otherwise be bidders were it not that they were assured that they can obtain a supply of coal at whatever the price of the auction sale, however low it may be. We believe that the Delaware, Lackawanna & Western Railroad Company has repeatedly offered to agree that after each sale was made they would sell no other coal at private sale at less price than the circular prices of the other companies, provided the other companies would agree to do as they used to in previous years, namely, issue their circular prices for the month prior to the sale and cease to notify their customers that they would sell at whatever the prices of the auction sale were. Again, it seems that what is probably an honest difference of opinion has existed upon the question of what the proportion between the supply and the demand for the current year is really going to be. While many, and probably a large number, especially the companies which are centered in Philadelphia, hold that it is utterly impossible to supply the demand that will be made for coal this year, there are some of the New York companies, notably the Delaware & Hudson Canal Company and the Pennsylvania Coal Company, who have been, and are now, acting under the belief that the supply of coal will be greatly in excess of the demand. These latter companies reason thus: that it would be folly to make any great advance in price unless the prices can be maintained, and that with an over-supply it is impossible to maintain prices without some restriction of production. It is believed that both of these companies have always agreed to advance prices if such a restriction of production as they think necessary could be agreed upon and lived up to. On the other hand, the companies who have by far the largest amount of tonnage claim that, as it is now impossible for them to fill their orders, there can be no great overproduction of coal, and, therefore, that it would be useless to stop production at a time when the demand is greatly in excess of the supply. One of these companies, the Philadelphia & Reading Coal and Iron Company, has also practically promised its men steady work throughout the year, and, having an abundance of orders for coal and a consequent ability to keep steadily at work, it sees no reason for a stoppage of production, however willing it might be to incur such a restriction of production if it should ever become necessary. In reviewing the whole subject, it seems that the conflicting views of all the gentlemen who are interested, and who should certainly know more upon the subject than any body else, might be reconciled by mutual conferences, and we understand a movement is on foot to bring about some such meeting, where the questions of fact involved can be examined into, understood, and settled. At present, the following three propositions may be safely stated:

"First. That if the Delaware, Lackawanna & Western Railroad Company would agree to discontinue its auction sales, there is a very reasonable probability of a fair understanding being arrived at by all the companies upon the subject of higher prices for coal.

"Second. If the Philadelphia & Reading Railroad Company and the Lehigh Valley Railroad Company would agree to certain arbitrary restrictions of production, there would be no difficulty whatever in making a fair arrangement with all the other companies for maintaining good prices for the entire product.

"Third. If the Delaware & Hudson Canal Company and the Pennsylvania Coal Company would agree to advance prices without requiring any restriction of production, there would be no difficulty in securing and maintaining better prices.

"There is little doubt these three propositions refer to all the difficulties that up to this time have been in the way of the success which, in our opinion, the coal trade should now meet with; and, while we are now, as we have been for some time, firm in the belief that the market will take about all the coal that can be produced, it would, therefore, be the part of wisdom for the several companies to throw aside all pride of opinion upon the subject of any pet theory which either may have advanced, and honestly to try to take advantage of what must be confessed to be an unusual demand for coal by getting the best price possible without requiring restriction of production until such restriction becomes necessary and the market actually refuses to take the coal offered."

THE RECEIVERS' ADMINISTRATION OF THE LEHIGH & WILKES-BARRE COAL COMPANY.

The special report of Joseph A. Clay, Master, concerning the administration of the Lehigh & Wilkes-Barre Coal Company by the receivers appointed February 12th, 1877, by Judge McKennan, of the United States Circuit Court for the Western District of Pennsylvania, has just been issued. It covers the entire period down to April 30th, 1879. At the time of the appointment of the receivers, the company was owner or lessee of upward of 34,000 acres of anthracite coal-lands in Luzerne, Carbon, and Schuylkill counties, Pa., having 37 slopes, 30 shafts, and 29 breakers, of an annual capacity of 4,000,000 tons of coal. A carefully-prepared schedule, taken by a committee of bondholders appointed next day at a meeting called by the receivers, placed the assets at $28,922,-567.30, and the liabilities at $31,088,042.16. The funded debt amounted to $15,864,129.08, and the floating debt to upward of $6,000,000, including $300,000 to miners for wages, $200,000 for taxes, and nearly $1,500,000 to the Central Railroad Company of New Jersey for tolls. The receivers made contracts with Charles Parrish and Edward B. Leisenring to work the Wyoming Division and Honeybrook mines, respectively, and those contracts have been renewed to date. The claim of G. G. Haven & Co., for $75,734.03, was settled by giving them 80 consolidated bonds of the company, and a like number of bonds of the Central Railroad Company of New Jersey. Property leased by Henderson Gaylord and others to the company in 1871 was, under a decree of the court, given up, together with improvements valued at $106,990.35 and $25,013.34 in cash, as an equivalent for arrears of rent, royalty, etc., due the lessors. The claim of the Bank of New York, amounting to $172,431.34, including interest, was settled in full, $56,650 of income bonds of the company being taken in part payment, the bank surrendering $11,500 of past-due coupons. To raise part of the necessary money, 290 bonds were sold for $99,247.50. The Diamond mine, one of the largest owned by the company, fell in about the middle February, 1877. The receivers agreed to assume half of the expense of repairs, and the contractor the other half. So far, the receivers have paid out $58,575.08, and $10,000 more will be required to complete the work. The mine was expected to be in working order by June 1st. The Lehigh mines in Carbon County were surrendered to the lessors, the Lehigh Coal and Navigation Company, under the following circumstances: The loss on mining under the lease had amounted to $700,000, besides which there was rent due to the amount of $194,206.92 and interest, and the company owed the lessors a further debt, including interest, of $415,070.89. The lessors allowed as credits against these sums and others in dispute the appraised value of the company's personal property located on the mines, aggregating $383,093.90; mortgage on Providence Pier, $130,000; canal-boats, at valuation, $75,800; $333,000 coal bonds, at 50 per cent, $166,500; leaving a balance due the receivers of $31,934.17, for which the Lehigh Coal and Navigation Company gave its monthly acceptances. The claim of Messrs. Ashley & Co. for $57,301.14, including interest, for wages of miners, was paid in full, $15,000 of the amount being given in receivers' certificates and $15,000 in Plymouth Water Company stock. The claim of E. G. Brown for $1065.73 was settled by an account in coal for that amount. The claim of Messrs. Conyngham & Payne for $85,000, as security for which they held acceptances secured by bonds of the Crystal Spring Water Company for $80,000, and a receivers' certificate for $15,000, was paid, with the exception of about $13,000, which will soon be adjusted.

In 1877 and 1878, the receipts aggregated $10,070,061.12, and the disbursements $9,965,423.37, leaving a balance January 1st, 1879, of $104,-637.75. Of this the receipts from the company were $355,059.37, and the payments on account of the company $1,001,150.31. The receivers' receipts were $9,715,001.75, and the receivers' payments $8,964,273.06. The receipts from coal mined in 10½ months in 1877 were $4,455,436.40, and the expense of mining $4,292,049.66, leaving a profit of $163,385.74. The earnings from other sources were $47,805.17, and the other expenditures $47,826.22, leaving an actual surplus of $163,365.69, which was applied to part payment of interest on the prior mortgages. The deficiency was $59,665.10, making the total interest accrued to December 31st, 1877, $102,772.25. At that date, the assets and liabilities of the receivers, excluding the business of the company, were: Liabilities, $1,201,477.29; assets, $1,141,812.19. The receipts from coal mined in 1878 were $4,166,-720.84, and the expenses of mining $3,745,938.43, leaving a profit of $420,-782.41. The earnings from other sources were $123,260.77, and the other expenditures $87,411.60, making the net profits $456,631.58; but out of this the receivers paid the interest on the prior mortgages, including the deficiency of 1878, amounting in all to $315,542.75. On December 31st, 1878, their account stood: Assets, $807,242.18; liabilities, $666,153.35; surplus, $141,088.83.

Holders of $4,600,000 out of $5,384,000 of the consolidated bonds of the company owned by individuals have agreed to surrender three years' coupons, commencing December, 1876, and to receive instead income bonds payable in 10 years. The Central Railroad Company of New Jersey, which owns $6,116,000 of similar bonds, agreed to cancel their coupons for the same time, and make their interest secondary to that of the others. It is proposed to issue $500,000 of five-year bonds secured by unincumbered real estate, the Central Railroad Company having agreed to remove their liens from the property for that purpose, the new bonds to be offered to the creditors of the company on terms in settlement of their claims, and to issue to the Central Railroad Company $1,510,316.45 income bonds, and a general certificate of indebtedness of about $3,000,000, with $900,000 of consolidated bonds as collateral security in satisfaction of the debt to them. It is believed that these measures will result in a considerable reduction of the total amount. The Lehigh Navigation Company has agreed to accept 3 per cent on its loan of $500,000 for five years from December, 1877, thus saving $15,000 annually. The owners of three quarters of the Wadhams second mortgages have agreed to extend the payment of the principal ($300,000) for five years from its due date, and to accept 3 per cent interest per annum, thus saving about $9000 annually. The Larue colliery bonds, amounting to $150,000, have all been redeemed and the mortgage canceled. Small mortgages amounting to about $10,000 have been paid in full. Proceedings for foreclosure have been begun on the Hakes & Hunlock mortgage of $60,000, and the Petty & Post mortgage of $78,000; but negotiations are in progress for an extension of time on the principal and a reduction of the rate of interest. The receivers have sold the Brooklyn property and coal-yard for $18,000. The retail coal-yards in New York and Jersey City have been given up and the personal property sold. No agreement has been effected with the New York & New Haven Railroad Company in regard to the New Haven pier property. To put it in working condition would require an outlay of $40,000 or $50,000. Certain lessors have reduced their annual rentals by $41,500, and have remitted $50,000 of arrears. Other negotiations for reductions are pending. The receivers have reduced the floating debt to the nominal sum of $4,660,827.58. The arrangement with the Central Railroad Company of New Jersey, before mentioned, will leave but $219,000 outstanding, and the receivers propose to arrange this sum out of the $500,000 mortgage bonds already explained.

"This," says Mr. Clay, "will practically put an end to the floating debt, so that it will no longer interfere with the expected resumption by the company of the direct control of its affairs." Mr. Clay goes on to speak

in the most eulogistic terms of the forbearance of the company's creditors, the intelligence, probity, and diligence of the receivers, and the happy concert of action of the receiver of the Central Railroad Company of New Jersey. He concludes as follows: "There is every reason to believe that within a comparatively short space of time both of these great corporations will be restored to the management of their stockholders; while, if any marked improvement shall hereafter take place in the coal trade, they may in the future look for reasonable profits and continued success."

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 6, 1879.

American Pig.—At no time during the past five years has the outlook for the iron producer been more flattering than to-day. There is an extraordinary consumption going on, and it promises to increase. There have been no large transactions in this market this week, but there has been a fair amount of business in ordinary lots. There is an inclination on the part of some to speculate in iron; but there is but little iron in the hands of speculators. This, coupled with the fact that producers deal more directly with consumers and the reduced number of brokers and dealers, compared with what there were before the panic, gives the market a much quieter appearance than the consumption would appear to warrant. The statistics of consumption for this year, when made up, will probably surprise even the sanguine. Prices are very firm. We quote No. 1 Foundry, at $18.50@$19; No. 2 Foundry, $17.50@ $18; Forge, $16@$16.50.

Scotch Pig.—We only learn of sales of 100 tons of Glengarnock and 50 tons of Coltness, all on private terms. We quote Coltness at $22@ $22.50, and Eglinton at $19@$19.50, these being the only brands in the market.

According to the report of Messrs. John E. Swan & Brothers, of Glasgow, dated May 23d, there were 89 furnaces in blast, or the same as a year previous. The quantity of pig-iron in Connal & Co.'s store was 263,378 tons, an increase of 2991 tons for the week and 63,961 since Christmas. The shipments to May 17th showed an increase of 46,142 tons, as compared with same date in 1878. The imports of Middlesbrough pig show a decrease of 27,279 tons in the same comparison. No. 1 brands of iron were quoted on the 23d of May as follows: Gartsherrie, 47s.; Coltness,52s. 6d.; Langloan, 49s. 6d.; Summerlee, 45s.; Carnbroe, 44s. 6d.; Glengarnock, 45s. 6d.; Eglinton, 42s 6d. Middlesbrough iron, f. o. b., Tees, was quoted as follows: No. 1 Foundry, 39s. 6d.; No. 2, 38s.; No. 3, 36s.; No. 4, 31s.; No. 4 Forge, 34s. 6d.

Rails.—We are reported a sale of 12,000 tons of steel rails by an Eastern mill, for delivery from August to February, at a price equal to about $49.50, delivered at St. Louis. We also note a sale of 2000 tons of iron rails, said to be at $39.50 at tide-water. For a long time the steel rail mills have been booked ahead for months with orders. It is now said that all the iron mills are full of orders for several months ahead, and that mills that have been idle for years are about to be started. The price of iron rails will probably only be limited by the cost of putting foreign rails into this market.

Old Rails.—These are in very good demand and firm, with an inclination to advance. We note sales of 200 to 300 tons of short pieces at $21, and quote for good lots at $22@$22.50.

Wrought Scrap.—We note a sale of 500 tons on private terms, and quote at $23.

A telegram from the Minister of Agriculture for Brazil, to Mr. B. G. Clarke, Chairman of the Committee on Manufactures in this city, says: "Brazilian government grants request, exhibitors giving reëxportation bond for goods exhibited. Empress pleased."

We publish the following letters from our regular correspondents. Prices are given on another page:

"COLUMBUS, O., June 3, 1879.

"The demand for pig-iron the past week has been very fair, and the prospect for a steady demand through the summer months looks encouraging. Charcoal irons are in good supply. We quote prices firm and unchanged."

"LOUISVILLE, KY., June 3, 1879.

"We have no change of moment to report. The market is quiet, with a slight falling off in the demand during the past week, but not enough to affect prices."

"PHILADELPHIA, June 5, 1879.

"PIG-IRON.—The market for pig-iron is remarkably strong and most furnaces refuse to sell for delivery beyond July, thinking a further advance will be obtained for fall deliveries. We quote No. 1, $18.50 to $20; No. 2, $16.50 to $18; Gray Forge, $16 to $17.

"MANUFACTURED IRON.—The demand for bars is brisk at this time. The lockout in Pittsburg has stimulated this market somewhat; but as we were having a good heavy demand, the market may now be quoted brisk, with firm prices. In skelp there has been quite a lively demand, and full prices rule. In flat and skelp a firm and lively market is reported. We quote: Bars, 1 8-10 to 2c. per lb.; Skelp, 1 9-10 to 2 1-10c. per lb.; Plate and Tank, 2 4-10 to 6c. per lb.

"RAILS.—The demand for steel rails continues, and mills are running to their full capacity, with orders up to November and December. In iron rails the mills have all they can do, and firm prices rule. It is reported that the Reading Railroad has leased the Palo Alto mill at Pottsville, which has been standing idle since 1873. We quote Steel, $42@$45; Iron, $34@32; all at mills.

"OLD RAILS.—The demand for old rails continues brisk, and full prices could be obtained; but as few are coming on the market, prices are nowhere. We quote $22@$22.50.

"SCRAP.—Wrought Scrap is scarcer, and quoted at $22@$24; Cast, $12@$16."

"PITTSBURG, PA., June 3, 1879.

"The mills have stopped, and the metal market is at a stand-still, with the exception of small lots for foundry use. Efforts are being made to adjust the differences between manufacturers and workmen; but the outlook at present is unfavorable. The puddlers' strike is supported by heaters, rollers, etc., so that all departments of the rolling-mills have been obliged to suspend operations."

"ST. LOUIS, MO., June 2, 1879.

"The prospects for a good fall business are growing better with each week; in fact, we are inclined to a very hopeful view of the future in every department of trade. An expectation, however, of extra prices is not warranted by the condition of business generally. Such prices can only be expected when circumstances to cause them are extraordinary, and at present there are none such presenting themselves here."

THE BRITISH IRON TRADE.

Messrs. Sanders Brothers, of London, under date of May 17th, say: "The opinion was generally expressed at the meeting last week of the Iron and Steel Institute, that steel will be made without doubt from Cleveland as well as almost all other low-class irons. This of course gives the deathblow to what remained of the iron-rail trade. For the time it disorganizes the steel rail market to some extent, as opinions vary considerably as to how much lower prices may go. It seems probable, too, that the process of puddling will shortly be eliminated entirely from the manufacture of iron.

"A good business has been done in Scotch pig-iron during the past month without much fluctuation having occurred in prices. The market opened at about 43s. per ton for warrants, and up to 44s. was paid, but we are back again to the former price. Shipments still continue large, and makers' iron is firm at the quotations given above. The average shipments for the past four weeks are 12,715 tons, as compared with 9047 tons for corresponding period in 1878. Stocks of pig-iron in Glasgow are estimated now at about 256,000 tons, or about 56,000 tons in excess of what they were at the commencement of the year. The strike among the miners in the north of England, to which we referred in our last month's issue, disorganized business throughout the whole district, and, of course, led to a very large curtailment of production in all branches of the iron trade; but, we are glad to say, the trouble is passing away, as it was agreed to submit the points in dispute to arbitration, and an award has just been given, so that work will doubtless promptly be resumed. Under this award, the men will have to accept a reduction of 6¾ to 9¾ per cent in wages. One or two failures have taken place in the Middlesbrough district within the past few days, but not of a serious nature, and it is expected that confidence will quickly be restored.

"In Staffordshire, pig-iron has been rather more active, owing to the absence of competition from the north consequent on the strike; but this improvement can only be temporary, and, with continually increasing stocks, the future of the trade has a very dismal aspect. Furnace coal has been reduced from 9s. to 8s. per ton, and buyers are looking for a proportionate reduction in the prices of iron.

"No revival has taken place in the manufactured-iron trade, the backwardness of the season in this country having checked building and such like operations which usually create a certain amount of activity in constructive iron at the present period of the year, and added to this the demand from Australia and India has been unprecedentedly slack for several months past. The galvanized trade is especially depressed, and orders seem to be becoming scarcer. In sheets and plates, there is a fair amount doing, owing to the government requiring considerable quantities for dock-yard purposes; but in nail-rods, fencing-wire, etc., Staffordshire makers are unable to compete with Belgium, where the bulk of our colonial orders seem to be going. Quotations remain nominally unchanged, £7 10s. being the basis for marked bars. Unmarked iron is very quiet, and only salable in most cases at under £6 per ton. Nail strip has been down as low as £5 15s."

LABOR TROUBLES.

THE GREAT STRIKE OF PITTSBURG IRON-WORKERS.—The great strike of the iron-workers began at Pittsburg on the 2d inst. Not a mill that has union men in its employ is at work. The only mill which is running is that of Clarke & Co., and they have only a few puddlers. On the south side of the city every thing is silent for square after square where the largest of the iron mills are located. Groups of idle men are to be seen on every corner and in front of every saloon. Between thirty-five thousand and forty-five thousand men have been thrown out of work. Not only are mill hands affected, but all the coal diggers in the mines connected with mills and the men employed in other branches.

The actual capital that will be idle, if the strike lasts, is estimated by business men to be $25,000,000 in this county alone. At Youngstown, O., $3,500,000 capital and 2500 men will be idle. At Sharon, Pa., $2,500,000 and about 1000 men will be idle. At Newcastle, Pa., $1,500,000 and about six hundred men will be inactive. There are dozens of other places in Eastern Ohio, Virginia, and Western Pennsylvania, where the iron mill-owners belong to the Western Iron-Manufacturers' Association, who pledge their honor not to take any action not indorsed by the committee appointed to take charge of their side of the case.

PITTSBURG, PA., June 3.—The Amalgamated Association of Iron and Steel Workers to-day unanimously rejected the offer of arbitration made by the manufacturers, and discharged their conference committee, saying there was no need of further conference. The men will remain out till the proprietors sign the scale. The Keystone Mill, which has signed the scale, was the only mill out of 49 mills here at which the puddlers worked to-day.

PITTSBURG, PA., June 5.—The iron manufacturers met this afternoon, when their Conference Committee reported that the puddlers would hold no further conferences with them and receive no concessions except the signing of the scale. A full discussion of the situation was had, after which the manufacturers adjourned without action, to meet again next Saturday, 7th inst. The chances are, that different manufacturers will sign the scale in a few days. This is the season for repairs in the iron mills, and these repairs are now in progress.

The puddlers express great encouragement over the situation. They say they have $100,000 to help them stay out, and will not yield. They would be glad to get work, though, at their price.

COAL AND IRON NOTES.

A VEIN of excellent coal, twelve feet thick, was lately found in Umatilla County, Oregon.

WHITEHALL, N. Y., June 2.—Ground was broken to-day on the extension of the new road from Dannemora to Chateaugay ore mines.

The Mauch Chunk *Democrat* of May 17th says: "The stock of the Bethlehem Iron Company is tending steadily upward. The Moravian congregation, of Bethlehem, on Wednesday of last week, sold 380 shares of stock at $45 and a fraction per share. This is an advance of more than $30 per share within eighteen months."

COAL STRIKE AT OLYPHANT, PA.—The Scranton *Republican* of the 3d inst. says: "Messrs. Filer & Davis have been engaged for some time in boring for coal on the old John Stevens farm in Blakely. Last week they struck and bored through a vein of solid coal fifteen feet and two inches thick. The coal is very fine. The land is owned by Messrs. Pierce, Winton, and Livy. With the development of this vein, Olyphant will start up and become a flourishing village."

NEW RAILROAD TO VIRGINIA MINERAL LANDS.—A company of Boston capitalists is preparing to build a railroad to connect Cincinnati with the Chesapeake & Ohio Railroad at Huntington, W. Va., and thus give Cincinnati an all-rail route to Richmond, Va. The new company is fully organized under the name of the Chesapeake, Ohio & Cincinnati Railroad, and owns 1,000,000 acres of fine mineral lands in West Virginia. It has negotiated $2,000,000 of bonds in New York, and proposes to build the road without asking any thing of other parties. Work will be begun in fifteen days.

ROLLING-MILLS TO BE LEASED.—POTTSVILLE, PA., June 4.—It was reported to-night that there is about to be consummated a lease of the Palo Alto Rolling-Mills by the Philadelphia & Reading Coal and Iron Company. The mills have been idle four years, and when in full operation will employ three to four hundred men. Mr. Coxe, superintendent of the company's rolling-mills, can not supply more than one third of the orders for railroad iron with the Reading and other mills now working, and probably in less than a month the Palo Alto mills will be working. Mechanics examined the works to-day, and will report their condition. The mills belong to Benjamin Haywood's estate, and an understanding exists between the executors and the company, although the lease is not yet signed.

SALE OF THE JOLIET IRON AND STEEL WORKS.—The *Inter-Ocean* of the 2d inst. says: "The extensive property of the Joliet Iron and Steel Works Company, at Joliet, Ill., has been sold under the second mortgage of over $750,000, by A. Ryerson, Esq., acting for the Farmers' Loan and Trust Company, of New York, trustee.

"The sale was made at the court-house in this city, under order of the Circuit Court of Will County, Ill. The property was bought in by a reorganization composed of the second-mortgage bondholders and others. This practically terminates a long litigation over the Joliet mill and works, and wipes out all liens against the property except the first mortgage of some $450,000. This lien is to be renewed at a lower rate of interest, and the new organization intend putting in new capital and improvements. The present management will undoubtedly continue, Mr. A. J. Leith, the receiver, being largely interested in the new company, and, with the better times, the Joliet mill has a promising future."

COAL MINING IN THE INDIAN TERRITORY.—We are indebted to the Sharpsville (Pa.) *Advertiser* of the 21st ult. for the following correspondence, dated McAllister (Choctaw Nation), Indian Territory, May 10th, 1879:

"The Osage Coal and Mining Company, operating here, has two mines which are about one mile apart. When running full time, they ship from 45 to 50 cars a day—12 tons on a car. The Missouri, Kansas & Texas Railway and Houston & Texas Central Railway take all the coal they ship. The coal is of the best quality for steam purposes. The slope is sunk with the coal from the surface, and the coal pitches eight inches to the yard, and is very dry; working a No. 3 pump drains the mine. At this slope there are 60 miners employed, and eight mules engaged in hauling out the coal from the rooms to the bottom of the slope, which is a double track, two loaded cars going up and two empty ones going down. Six men are employed outside in handling the coal and refuse slack.

"Last month, the slope ran eight days, and the miners averaged $35 to $40; running full time, they average $75 to $80 per month.

"At the other slope, about the same number of men are employed. There they wash all the refuse slack and coke it in ovens. It makes a superior quality, which is shipped all over the country. They have 22 coke ovens. There is a store in connection with the mines; provisions, calicoes, and other goods are a great deal higher than in the States.

"Every man employed by the Osage Coal Company pays 42 cents per month for a permit to the Indians for working in the nation."

THE CORNWALL ORE HILLS.—The Lebanon (Pa.) *Daily Times*, says: "Skilled engineers have estimated the amount of ore in these hills at forty millions of tons—a large amount.

"It should be remembered, too, in passing, that the great anthracite coal-fields of Pennsylvania are, figuratively speaking, at our very door, or side by side with these millions of tons of ore, surrounded by the best quality of limestone in unlimited abundance—the three prime essentials in the production of pig-iron on the modern scale of quantity. Yet with it all, possessing the conditions to make Lebanon or its immediate vicinity the greatest iron-producing region on the American continent, it remains a mere fractional part, seemingly content to follow in the rear rather than lead the van. The latter is a birth-right, and must be enjoyed if the position is sought—a position subject to the owners of ore and coal mines, and transportation companies, but having a large bearing upon capital with a corresponding relation to labor and commercial influence on the pig-iron markets of the world. It may be that futurity, with the onward march of coming events, will endow the iron business in this section with an enterprise and industry such only as the highly favorable circumstances are capable of producing. As it is, there seems to be a waste of forces—an omission of opportunities—an indifference to the possibilities of the greatest magnitude in the manufacture of pig-iron. Doubtless there are some difficulties in the way. But, as a rule, we are apt to dispose of them when the prospect brightens beyond; and to cherish a kindred hope in the present case, although it may never be realized, can do no harm. Yet the general conditions for the magnitude of business, as we see it in our mind's eye, remain the same—unchanged and unchangeable except by exhaustion, which would be a work of many years."

THE COAL INDUSTRIES OF MASSILLON, OHIO.—A correspondent writing to the Pittsburg *Telegraph*, under date of Massillon, O., June 2d, 1879, says: "The Rhoades Coal Company is operating several large mines in this neighborhood. The Willow Bank, which has been idle for a long time, started up about the 1st of May, and has now employed from 50 to 75 men. A portion of the mine is yet under water. The Mountain bank has been running some all winter and spring, but is now on full time, employing from 150 to 175 men. The 'Groundhog,' or Willow No. 3, is a canal bank, and generally runs steadily while navigation remains open. They have been shipping by rail the past few weeks, but will likely resume canal shipments as soon as the price question is settled. From 75 to 100 men are at work in this mine. The Wormington mine, also operated by this company, gives employment to about 100 men. This company has also secured a contract for furnishing coal to the Dover furnace, which was lighted up last week.

"The Grove Coal Company has been running pretty fairly all winter, but is now on full time, employing about 125 men. The company ships both by rail and canal to the lake.

"The Youngstown Coal Company has been run pretty steadily all spring, with fair prospects for continuing. This company has been very unfortunate in its opening here, the coal, as far as opened up, being low, causing deficiencies to be paid for mining and adding largely to the expense. About 130 men are now employed, and the prospects for a steady run all summer seem to be quite good.

"The Oak Hill mines have been running quite steadily during the winter and spring, shipping to Cleveland and to points along the Fort Wayne road. From one part of this mine a good gas-coal is taken, which gives them a fair share of trade. From 50 to 75 men are employed.

"The Massillon City mine is not averaging much over half its usual output. The Sippo Coal Company has not yet completed the switch to its mine, and is doing but little. The Crawford slope will likely be finished in a week or ten days. The Pigeon Run mine, one of the largest and best in the valley, shut down on account of some difficulty between the men and the company. The Burton mine, at North Lawrence, continues running, but the Mullen bank at that point is about worked out."

THE BEST ANTHRACITE AND BITUMINOUS FURNACE WORK BY AMERICAN ESTABLISHMENTS.—We are indebted to the *Bulletin of the Iron and Steel Association*, of May 31st, for the following record, chiefly collected from official sources, giving examples of remarkably large products of American furnaces. The *Bulletin* says: "Taken as a whole, the record here printed is the best the metallurgical world has ever known."

Authracite Furnaces.—One of the furnaces of the Bethlehem Iron Company, at Bethlehem, Pa., 70 feet by 17 feet, made $1737\frac{1120}{2240}$ tons of pig-iron in one month, $428\frac{1280}{2240}$ tons in one week, and $61\frac{860}{2240}$ tons in one day.

The Durham Furnace, at Riegelsville, Pa., 76 feet by 20 feet, made 1532 tons of pig-iron in 30 days, 387 tons in one week, and 62 tons in one day.

The Warwick Furnace, at Pottstown, Pa., 55 feet by 16 feet, made 1590 tons in one month in 1878, $387\frac{1134}{2268}$ tons in one week, and $58\frac{1134}{2268}$ tons in one day. Its best yield for any 24 consecutive hours was 60 tons.

The Crane Furnace No. 5, at Catasauqua, Pa., 65 feet by 18 feet, made 340 tons of No. 1 foundry pig-iron in one week in August, 1875; in four weeks it made 1301 tons.

The largest furnace of the Lackawanna Iron and Coal Company, at Scranton, Pa., 67 feet by 23 feet, made 16,017 tons of pig-iron in 1876; weekly average, 308 tons.

The Onondaga Furnace, at Geddes, N. Y., 60 feet by 15 feet, on part coke, made $2093\frac{168}{2240}$ tons of pig-iron in two months in 1876.

One of the Coleraine Furnaces, at Redington, Northampton County, Pa., 60 feet by 18 feet, made 13,193 tons of pig-iron in 1874; weekly average, 253½ tons.

Bituminous Furnaces.—The Lucy Furnace No. 1, at Pittsburg, Pa., 75 feet by 20 feet, made in one calendar month $3234\frac{998}{2268}$ tons of pig-iron; one week, $818\frac{1406}{2268}$ tons; one day, $138\frac{496}{2268}$ tons. The Lucy Furnace No. 2, same size, made $3286\frac{1972}{2268}$ tons in one calendar month; $823\frac{1986}{2268}$ tons in one week; $130\frac{2210}{2268}$ tons in one day. Both furnaces running together made $6424\frac{888}{2268}$ tons in one calendar month; $1611\frac{1432}{2268}$ tons in one week; $257\frac{2014}{2268}$ tons in one day.

The Isabella Furnace No. 1, at Etna, Alleghany County, Pa., 75 feet by 18 feet, made $702\frac{1120}{2240}$ tons of pig-iron in one week in 1875. The Isabella Furnace No. 2, 75 feet by 20 feet, made $770\frac{660}{2240}$ tons in one week in November, 1875; its best day's work in the same week was 116 tons. In one calendar month in 1875 it made $3163\frac{100}{2240}$ tons. The best week's work of the two furnaces running together was 1194 tons; best month's work, 4910 tons.

The Centennial Furnace, at Johnstown, Pa., 75 feet by 20 feet, made 578 tons of pig-iron in one week in May, 1877.

The Riverside Furnace, at Wheeling, W. Va., 75 feet by 18 feet, made $2322\frac{1920}{2240}$ tons of pig-iron in one month; $578\frac{320}{2240}$ tons in one week; and $95\frac{510}{2240}$ tons in one day.

The Struthers Furnace, at Struthers Station, Mahoning County, O., 54 feet by 16 feet, made 2061 tons of pig-iron in the month ending November 28th, 1877; its best week's work was 507¼ tons; best 7 days' work was 538 tons.

One of Shoenberger, Blair & Co.'s furnaces, at Pittsburg, Pa., 65 feet by 13½ feet, made 423 tons in one week in December, 1876.

One of the Milwaukee Iron Company's furnaces, at Milwaukee, Wis., 66 feet by 17 feet, made 375 tons of pig-iron in one week in July, 1875.

The Ormsby Furnace, at Sharpsville, Mercer County, Pa., 50 feet by 12 feet, made 301 tons of pig-iron in the week ending January 22d, 1876.

The No. 2 Furnace of the Pennsylvania Steel Company, 75 feet by 20 feet, on fuel consisting of ⅓ anthracite and ⅔ coke, made $2916\frac{456}{2240}$ tons of pig-iron in November, 1878; $725\frac{776}{2240}$ tons in one week; $107\frac{991}{2240}$ tons in one day.

EFFECTS OF THE ELECTRIC LIGHT.—Professor Cohn, of Breslau, having tested the electric light with reference to visual perception, finds that letters and minute objects can be seen by it and colors distinguished at a much greater distance than either by day or gas light, and he concludes that it may be utilized for signals necessary to be seen at a great distance.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending May 31st and years from January 1st:

TONS OF 2240 LBS.	1879.		1878.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co..	80,377	1,173,840	26,374	789,657
D. L. & W. RR. Co.	75,654	1,345,984	47,210	707,739
Penn. Coal Co.....	34,045	525,500	37,170	263,659
L. V. RR. Co.....	13,961	367,546	8,045	286,055
P. & N. Y. RR. Co..	528	9,344	.....	9,593
C. RR. of N. J.....	51,171	718,633	20,861	331,424
Penn. Canal Co.....	13,306	87,679	774	64,120
	269,042	4,228,526	140,434	2,452,247
Lehigh Region.				
L. V. RR. Co.....	71,668	1,163,995	31,490	825,174
C. RR. of N. J.....	40,822	811,370	23,291	428,656
S. H. & W. B. RR..	67	9,715	492	8,615
	112,557	1,985,080	55,273	1,262,445
Schuylkill Region.				
P. & R. RR. Co	188,563	2,754,937	987	1,372,536
Shamokin & Lykens Val....	20,235	309,841	6,886	225,658
	208,798	3,064,778	7,873	1,598,194
Sullivan Region.				
Sul. & Erie RR. Co.	1,607	21,466	675	12,795
Total	592,004	9,299,850	204,255	5,325,681
Increase.....	387,749	3,974,169	.....	.....
Decrease	.....	.....	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

The increase of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania railroads, amounts to 58,976 tons, as compared with the corresponding period in 1878.

Belvidere Delaware Railroad Report for week ending May 31st:

	Week.	Year. 1879.	Year 1878.
Coal for shipment at Coal Port (Trenton)	355	1,037	719
Coal for shipment at South Amboy	10,829	190,914	191,982
Coal for distribution.....	5,471	134,073	65,761
Coal for Company's use	1,480	33,918	32,918

Coals Cleared on the Canals of the State of New York for the week ending May 28th, and year from the opening of navigation:

Tons of 2000 lbs.	1879.		1878.	
	Week.	Year.	Week.	Year.
Anthracite.....	41,780	132,020	30,734	67,770
Bituminous.....	5,348	11,349	7,098	18,477
Total amount cleared..	47,128	143,369	37,832	86,247

Statement of Coal Business at Fair Haven for the week ending May 31st:

	Tons.
Receipts.	.....
Shipments.....	694
On hand May 31st.....	35,410

Receipts and shipments of coal at Chicago Ill., for the week ending May 31st, and year from January 1st:

	Week. Tons.	Year. Tons.
Receipts.....	78,844	776,140
Shipments.....	7,598	159,206

Perth Amboy Business:	Tons.
Received for the week	31,548
Shipped for the week....	40,991
On hand May 31st.....	137,611

The Production of Bituminous Coal for the week ending May 31st was as follows:

Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2240 lb	35,672	558,414
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.....	6,676	145,901
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.....	2,501	58,664
*East Broad Top.....	1,223	23,677
Clearfield Region, Pa.		
*Snow Shoe.....	732	8,944
*Tyrone and Clearfield.....	26,288	478,321
Alleghany Region, Pa.		
*Pennsylvania R. R	3,347	63,692
Pittsburg Region, Pa.		
*West Penn R. R.....	3,330	70,652
*Southwest Penn. R. R.....	878	13,564
* Penn & Westmoreland gas coal, Pa. R. R.....	13,060	281,607
*Pennsylvania R. R.....	8,116	144,549

*For the week ending May 14th.

The Production of Coke for the week ending May 14th:

Tons of 2000 lbs.	Week.	Year.
West Penn R. R.....	1,342	33,870
Southwest Penn. R. R.....	16,089	287,646
Penn. & Westmoreland Region, Pa. R. R.	1,902	40,488
Pittsburg, Penn. R. R.....	3,223	55,428
Penn. R. R. (Allegheny Region).....	591	16,059
Total.....	23,147	433,491

PRICES OF COAL.

New York.

Wholesale Prices of Anthracite Coal Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2240 lbs.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
WYOMING COAL.	$	$	$	$	$	$
§Lackawana, at Weehawken	2 45	2 45	2 45	2 50	2 80	2 65
*Pittston, at Newburg.....	2 15	2 15	2 15	2 20	2 35	2 35
Honey Brook Lehigh.....	3 25	.....	2 80	2 80	2 80	2 65
Wilkes-Barre at Pt. Johnson	2 45	2 45	2 45	2 50	2 80	2 65
Plymouth R. A. at P. John.	.....	.....	2 45	2 50	3 00	2 70
LEHIGH COAL.						
†Spring Mt. at P. Amboy....	3 25	.....	2 85	2 85	2 85	2 75
Old Company L., at Eliz'p't	3 30	.....	2 75	2 75	2 75	2 60
Cross Creek, at Port John.	3 10	3 10	2 90	2 90	2 80	2 65
†Buck M. at Eliz. Pt. or S. A.	3 00	2 75	2 75	2 75	2 85	2 75
Fulton.....	3 30	.....	2 90	2 90	2 80	2 65
SCHUYLKILL COAL.						
‡*Alongside at N. Y. Harbor.*						
Hard White Ash....	3 25	3 25	2 90	2 90	3 00	2 85
Free-Burning W. A.....	2 65	2 65	2 65	2 70	3 00	2 85
Schuylkill Red Ash.....	.....	.....	.....	3 00	3 15	2 85
Lorberry.....	.....	.....	.....	3 25	3 50	3 25
Lykens Valley Vein.....	.....	.....	.....	3 75	4 00	3 75
.....	.....	.....	.....	.....	.....	.....

* Fifty cents per ton additional for delivery in New York, and fifteen cents per ton additional for delivery at Weehawken.

† These prices are given by Whitney, McCreary & Kemmerer.

‡ On coal delivered f. o. b., at shipping wharf at Williamsburg, the current rate of harbor freight will be allowed from above prices.

§ F. o. b. at Weehawken, N. J.

Buffalo. June 3, 1879.

[Specially reported by E. L. HEDSTROM.]

Retail prices, screened and delivered, per ton of 2000 lbs

Grate.	Egg.	Stove.	Chestnut.
$3.50	$3.50	$3.75	$3.75

The wholesale prices are nominally at $2.95 per ton of 2000 lbs. for all sizes.

Chicago. May 31, 1879.

[Specially reported by Messrs. RENO & LITTLE.]

Retail prices of coal delivered per ton of 2000 lbs

Lackawanna Stove	$6.50	Cannel	$6.00
" Chestnut	6.00	Wilm'gton & Ill	3.50
" Egg	6.00	Indiana Block	4.50
" Broken	6.00	Blossburg	5.50
Erie and Brier Hill	$5.50		

Cincinnati. May 31, 1879.

[Specially reported by the Consolidated Coal & Mining Co.]

Per bushel of 72 lbs.

	Retail delivered.	Wholesale afloat.
Youghiogheny	None in market.	
Kanawha River...	10c.	7@8c.
Camden.....	8c.	5@5½c.
Pomeroy.....	8c.	5@5½c.

	On cars.	Delivered.
Lack. & Wilkes-Barre	$3.75@$4.00	$4 50@$5.00
Sugar Loaf Lehigh	4.75@ 5.00	5.50@ 6.00

Cleveland. June 2, 1879.

[Specially reported by F. A. BATES, Esq.]

Per ton of 2000 lbs. f.o.b. vessels.

WHOLESALE.

Brier Hill (Church Hill).....	$3.15
" " No. 2 Grades.....	2.85
Massillon.....	2.40
" No. 2 Grade.....	2.30
Monday Creek...	2.40
Straitsville Lower Vein.....	2.40
Hocking Valley.....	2.40
Tuscarawas Valley.....	2.15
Columbiana.....	2.15
Nut coal, various grades	1.70@2.00
Screenings " "	1.25@1.60
Youghiogheny gas coals	3 50

RETAIL TRADE.

Lump.

Brier Hill lump.....	$4.00
Massillon and Mineral Ridge.....	3.50
Monday Creek.....	3.25
Straitsville Lower Vein.....	3 25
Hocking lump.....	3.25
Rich Hill.....	3.00
Columbiana.....	2.75

Nut.

Massillon and Mineral Ridge.....	3.25
Monday Creek.....	3.00
Straitsville, Lower Vein.....	3.00
Hocking Valley.....	3.00
Columbiana	2.50

Hard Coal on Track—Wholesale.

Steamboat..... ..	$3.30
Grate.....	3.30
Egg	3.30
Chestnut.....	3.30
Stove.....	3.45

Indianapolis. June 2, 1879.

[Specially reported by Messrs. COBB & BRANHAM.]

WHOLESALE BITUMINOUS.

On board cars, per ton of 2000 lbs.

White River...	$2.50	Sand Creek.....	$2.50
Brazil Block	2.35	Raymond City.....	3.40
Highland Grate.....	1.85	Youghiogheny.....	3.70
Indiana Cannel.....	3.65	Blossburg (smithing)..	4.50
Peytona.....	5.70		

Per car, 12 tons.

Block coal, nut.....	$16.00	Block Slack....	$13.00
Highland, "	15.00		

RETAIL BITUMINOUS.

Delivered per bushel of 70 lbs.

White River.....	12c.	Block Nut, steam use....	6c.
Brazil Block.....	12	" Slack, "	5
Highland Grate.....	10	Virginia Cannel.....	24
Block Nut, domestic use.	11	Indiana Cannel.....	16
Highland Nut, " "	10	Youghiogheny.....	16
Sand Creek.....	12	Blossburg.....	24

GAS COKE.

Per bushel, measure containing 2888 cubic inches.

Retail, crushed.	14c.	Wholesale, lump.....	10c.
" lump....	12	" crushed....	12

ANTHRACITE.

Per ton of 2000 lbs.

Wholesale on Cars.		*Retail delivered.*	
Wilkes-Barre, all sizes.	$5.50	Wilkes-Barre, all sizes.	$7.00
Lackawanna, "	5.50	Lackawanna, "	7.00
Lehigh "	6.75	Lehigh, "	8.00

Hamilton, Ont. June 2, 1879.

[Specially reported by H BARNARD.]

Retail prices delivered per ton of 2000 lbs.

Pennsylvania Coal Co.'s Pittston Coal.

Grate.....	$4.50	Lehigh Lump.	$6.00
Egg	4.50	Brier Hill.....	5.50
Stove.....	4.75	Reynoldsville steam...	4.50
Chestnut.....	4.50	Blossburg.....	5.00

Louisville. June 4, 1879.

[Specially reported by Messrs. BYRNE & SPEED.]

Wholesale per bushel of 72 lbs.

Pittsburg	8½c.	Kentucky, on cars.....	5¼c.
Raymond City.....	7½		

Retail.

Pittsburg.	11c.
Raymond City.....	10c.
Cannel.....	17c.
Kentucky...	7 3-5c.
Coke.....	8c.
Anthracite, per ton.....	$7.00

Milwaukee. June 2, 1879.

Specially reported by Messrs. R. P. ELMORE & Co.]

Retail price per ton of 2000 lbs.

Lehigh prepared, chippings.....	@$7.00
" " lump.....	@ 7.50
Lackawanna prepared (all sizes).....	@ 6.50
Briar Hill.....	@ 5.50
Steam cokes.....	$3.75@ 4.75

Montreal. June 2, 1879.

[Specially reported by Messrs. ROBERT C. ADAMS & Co.]

Prices of Anthracite per ton of 2000 lbs. delivered.

Stove.....	$5.00	Chestnut.....	$5.00
Egg..	5.00		

Bituminous, to arrive, per ton of 2240 lbs. ex ship.

Scotch Steam.	$4.25@$4.50	Sydney....	$3.25@$3.50
Pictou..... ...	3.75@$4.00		

St. Louis. May 31, 1879.

[Specially reported by Messrs. LEWIS P. HARVEY & Co.]

Retail prices, delivered. Ton of 2000 lbs.

	Per ton.		Per ton.
Lackawanna....	$7.00@.....	Lehigh Lump..	$7.50@.....
Wilkes-Barre...	7.00@.....	Connells. Coke.	6.00@.....
Schuylkill.....	7.50@.....	Blossburg.....	7.75@.....
Big Muddy....	$3.50	Piedmont..... .	$7.25
Indiana Block.	3.25	Pittsburg.....	6.75
Illinois Coals..	2.25	Peytona	7.50
Blossburg.. ..	7.50	Lehigh Val. Ant..	7.50@8.00

Toledo. May 31, 1879.

[Specially reported by Messrs. GOSLINE & BARBOUR.]

ANTHRACITE.

Ton of 2000 lbs.

	Grate.	Egg.	Stove.	Chest.
Pittston.....	$3.75	$3.75	$3.90	$3.75
Wilkes-Barre	3.75	3.75	3.90	3 75
Lackawanna....	3.75	3.75	3.90	3.75

Retail, per ton of 2000 lbs. delivered in the city:

Grate.	Egg.	Stove.	Chestnut.
$4.50	$4.50	$4.75	$4.50

BITUMINOUS.

Ton of 2000 lbs.

Straitsville lump.....	$2.35	Massillon nut.....	$2.25
" nut.....	2.00	Willow Bank lump....	2.75
Shawnee lump	2.60	" nut.....	2.25
" nut.....	2.25	Cumberland	4.00
Hocking Valley lump.	2.35	Blossburg.....	4.00
" nut..	2.00	Morris Run.....	4.00
Massillon lump	2.75	Gas Coal	3.25

Retail prices, delivered in the city, are: Stove, $6.00; Grate, Egg, and Chestnut, $5.75.

FREIGHTS.

Ocean Freights.

Ocean Freights on coal, iron, etc., per ton of 2000 lbs. to and from foreign and domestic ports, for two weeks ending June 4th, 1879, are given below.

DATE.	From	To	Cargo.	R'te
May 21	Barren Island.....	Baltimore..	*	1.25
" 21	Perth Amboy.....	City Point.....	§	1.10
" 21	Hudson....	Boston.....	Pig-iron	2.25
" 23	Cadiz.....	Boston.....	Salt.....	6c
" 23	New York...	Galveston	RR. iron	4.75
" 23	Perth Amboy.....	Portland	Pig-iron	‡
" 27	New York.....	Hull, England..	†	25s
" 27	New York.....	Halifax	Iron ore	1.35
" 27	Perth Amboy.....	Portsm'th, N.H.	Pig-iron	1.75
" 28	New York.....	Baltimore.....	Guano. .	1.00
" 29	Morant Cay.....	N. Y. or Balt..	Guano. .	3.00
June 3	Boston.....	San Francisco..	Iron...	‖
" 3	Baltimore...	Aspinwall.....	Coal....	4.25
" 3	Baltimore...	St. Jago.....	Coal....	2.50
" 3	Cow Bay.....	New York.	Coal....	1.50
" 3	New York.....	Calcasieu Pass.	RR. iron	4.00
" 3	New York.....	Port Royal....	Salt....	10¶
....	....	... .	... .	....
....	....	... .	... .	....

* Phosphate. † Machinery. ‡ $1.60 and discharging. § Steel rails. ‖ $8@$10. ¶ Per 200-lb. sack.

Lake Freights on Coal and Iron Ore.

Representing the latest actual charters up to June 4th, 1879.

Free in and out to the vessel :

From	To	Rate Per ton.	From	To	Rate Per ton.
Ashtabula.	Chicago....	$0.40	Buffalo....	Saginaw....	40-50
Buffalo....	Cleveland..	15	"	Toledo.....	15
"	Chicago....	30	"	Kenosha...	50
"	Milwaukee.	30	Cleveland.	Muskegon.	.. ..
"	Detroit. ...	15	"	Chicago....	40
"	Bay City...	30	"	Milwaukee.	.. ..
"	Duluth.....	50	"	Detroit.....	.. ..
"	Green Bay.	40	"	Racine.....	.. ..
"	Marquette..	40	"	Toronto. ..	90
"	Racine	40	Erie.....	Duluth*...	60
"	Sandusky..	20	Fairport ..	Buffalo....	.. ..
"	Escanabia..	40	"	Port Huron	.. ..

* Iron rails.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to June 5th, 1879.

Ports.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Alexandria.....	1.00	.....	.....
Annapolis, Md...	.....	.....	.....
Apponang.....	1.35	.....	.....
Augusta, Me.....	.....	.....	.....
Baltimore	60	.....	.....
Bangor.....	.....	.....	1.35
Bath, Me.....	.....	.....	1.35
Boston, Mass.....	1.60@1.65	.....	1.35
Bridgeport, Conn.	85	.....	60
Bristol, R. I.....	.....	.....	.....
Brooklyn.....	.....	.....	.....
Cambridge, Mass.	.....	.....	1.35
Cambridgeport ..	.....	.....	.....
Charleston.....	1.20@1.23	.....	.....
Charlestown....	.....	.....	1.35
Chelsea	.....	.....	1.35
Danversport. ...	.....	.....	1.35†
East Cambridge.	.....	.....	1.35
Fall River.....	.....	.....	1.00
Fredericksburg..	.....	.....	.....
Galveston.....	.....	.....	.....
Gardner, Me.....	.....	.....	1.55
Georgetown, S.C.	.....	.....	.....
Gloucester.....	.....	.....	1.35
Hackensack.....	.....	.....	.....
Hartford.....	1.60	.....	1.35
Hingham.....	.....	.....	.....
Hyannis.....	1.50@1.50†	.....	.....
Jersey City.....	.....	.....	.....
Lynn	.....	.....	1.35†
Marbleh'd, Mass.	.....	.....	.....
Medford.....	2.00	.....	.....
Milton.....	.....	.....	.....
Nantucket.....	.....	.....	.....
Naponset.....	1.65	.....	.....
Newbern, N. C...	.....	.....	.....
New Bedford	1.40@1.45	.....	1.00
New Brunswick..	.....	.....	.....
New Castle, Del.	.....	.....	.....
Newburyport	.....	.....	1.50
New Haven.....	85	.....	60
New London.....	.....	.....	85
Newport.....	1.50	.....	1.00
New York.....	85	.....	.....
Newark.....	.....	.....	20‖
Norfolk, Va	.....	.....	.....
Norwich.....	.....	.....	95
Norwalk, Conn ..	.....	.....	.....
Pawtucket.....	1.50	.....	1.05‡
Plymouth.....	.....	.....	.....
Portland.....	1.55@1.60	.....	1.35
Portsmouth, Va..	.....	.....	.....
Portsmouth, N.H.	1.60@1.70	.....	1.50
Providence.....	1.25@1.40	.....	1.00
Quincy Point.....	1.60	.....	.....
Richmond, Va...	90	.....	.....
Rockland.....	.....	.....	1.35
Rockport	.....	.....	.....
Saco.....	1.90	.....	1.60
Sag Harbor.....	.....	.....	.....
Salem, Mass.....	1.60	.....	1.35
Saugus	1.80	.....	.....
Savannah.....	1.50@1.53	.....	.....
Somerset.....	.....	.....	1.00
St. John, N. B..	1.10	.....	.....
Stamford.....	.....	.....	.....
Thomaston.....	.....	.....	.....
Trenton.....	18	.....	.....
Wareham.....	.....	.....	.....
Washington.....	90@1.00	.....	.....
Wilmington, Del.	.....	.....	.....

* And discharging and towing. † And discharging. ‡ And towing. § 3 cents per bridge extra. ‖ Alongside. * 1.50@1 50§@1.60.

PRICES OF IRON.

Buffalo. June 4, 1879.

[Specially reported by Messrs. PALEN & BURNS.]

	4 mos.
No. 1 Ex. Foundry	$19.00
No. 2 " "	18.00
No. 3 Forge	17.00
American Scotch A 1	20.25
" " B 1	19.25
" " No. 2	18.25
" " No. 3	.....
Best selected Connellsville coke, per net ton	4.85
Old Car Wheels	$19.25 cash.
Old Scrap Iron	13 50 "

Prices per gross tons delivered on cars at Buffalo.

Pittsburg. June 3, 1879.

[Specially reported by A. H. CHILDS.]

	4 mos.		4 mos.
No. 1 F'dry	$18.00@$20.00	M. & White	$14.50@$16.00
No. 2 "	17.00@ 18.00	Hot Blast Ch.	22.00@ 24.00
Gray Forge	16.60@ 20.00	Cold Blast W.	.....@ 35.00

Richmond, Va. June 4, 1879.

[Specially reported by ASA SNYDER, Esq.]

Amer. Scotch Pig Iron	$21.50@$22.50
Anthracite " " No. 1	19.00@ 20.00
" " " No. 2	18.50@ 19.00
" " " No. 3	17.00@ 18.00
" " Mottled	15.00@ 16.00
Coke " No. 1	19.00@ 20.00
" " No. 2	18.00@ 19.00
Va. Cold Blast Charcoal Pig Iron, cold short	19.00@ 22.00
" " " " " neutral	27.00@ 28.00
" Warm " " " "cold short	18.00@ 20.00
" " " " " " mill	17 00@ 18 00
Old Rails	17.00@ 18.00
Wrought scrap No. 1	16.00@ 17.00
Cast scrap—Machinery	15.00@ 16.00
Richmond Refined Bar Iron	2.00@ 2.10
Horse-shoes	4.00@ .....
Mule-shoes	5.00@ . ..
Old Dominion nails (standard size)	2.25 keg.

Freight by sail to New York, $1.60 for 2240 lbs.

St. Louis. June 3, 1879.

[Specially reported by CARD & HOFFER.]

We quote :

Missouri	$19.50@20.0
Southern	18.50@19.50
Hanging Rock	21.00@22.00
Missouri	None offering.
Southern, No. 1	18.50@19.50
Ohio River, No. 1	19.00@21.00
Jackson County, No. 1	19.00@20.00
Hocking Valley, No. 1	19.00@20.00
Anthracite	20.50@21.00

No. 2 and mill, $1 to $2 per ton less.

Missouri	25.00@30.00
Southern	25.00@30.00
Ohio	30.00@32.00

IRON ORE.

Iron Mountain	5.50
Southwest	4.75
Ore for flux	6.50
Rails	20.00@20.50
Wheels	20.00

METALS.

NEW YORK, Friday Evening, June 6, 1879.

There has been a very active and, to an extent, unexpected, business in metals this week, and the outlook still continues to be very favorable.

RECEIPTS OF METALS AT NEW YORK FOR THE WEEK ENDING JUNE 5TH AND YEARS FROM JANUARY 1ST, 1878 AND 1879.

	1879.		1878.	
	Week.	Year.	Week.	Year.
Copper, bbls. ..	764	3,788	1,162	6,205
Copper, boxes. .	.....	.....	.....	113
Copper, cakes...	509	8,467	517	5,864
Lead, pigs.....	922	98,157	2,841	151,395
Spelter, pieces..	180	45,161	1,728	25,062
Quicksil'r, flasks.	225	4.125	25	558

Copper has been very quiet at 16¼c. nominal.

From London, under date of May 27th, we have received the following :

"The lower prices accepted to-day for Chili bars have induced rather more business than we have lately noted ; the transactions reported this afternoon amounting to about 300 tons, of which the greater portion consisted of good ordinary and favorite brands, the former selling at £55, the latter at £55¼, cash, while £56 and £56½ was paid for best marks. The telegram with the news of the charters, is expected to arrive during the present week, and the general opinion is, that the quantity advised will be rather large, as it will most likely contain further shipments out of the stock of the late A. Edwards, whose executors are transferring the metal to Europe for the sake of security. Wallaroo and Burra cake remain at £62 ; English quiet at £59@£60 for tough cake ; £61 to £62 for select ingot ; £64@£64½ for India sheets ; and £65@£65½ for other sheets ; Y. M. sheets, 55-16@57-16 ₱ lb."

Tin.—This article has shown a great deal of activity, the business amounting to about 500 tons of all kinds, at 14⅝@14¾c.. About 400 tons of this came from importers. At the close, 14¾c. is bid, and 15c. asked for Straits, Australian, Billiton, and Malacca. In L. & F., 25 tons were sold, at 14½@14⅝c., closing at 14⅝@14¾c. Refined is nominal at 15c., and Banca at 17½c. To-day's London quotation is £67. Singapore quotes $19.50 and Penang $19, with exchange at 3s. 11½d.@4s. The shipments from the Straits to this country in May were 100 tons.

Our London letter of May 27th contains the following :

"The Banca sales went off from 39½ fl.@39¾ fl., the average being 39·55 fl. = 67s. in warehouse, London. Straits and Australian quoted 66¾s., cash, and a small business done thereat."

Tin Plates.—We note sales of 5000 boxes on private terms. The market is a little stronger. We quote per box as follows : Charcoal, bright, Melyn grade, ⅛ X, at $6.37½@$6.25, and Allaway grade at $6@$5.75 ; charcoal ternes, Allaway grade, $5.50@$5.62½ ; coke, bright, B. V. grade, $5, and coke roofing, 14x20, $5.

Messrs. Robert Crooks & Co., of Liverpool, under date of May 22d, say of tin and terne plates :

"It being now pretty generally understood that heavy 'bearing' sales have been made, the market, depressed already by the slackness in demand usual at this season, shows a further sharp decline. Coke tins are the description most affected, the drop in these being not less than 2s. from the figures obtained two months ago. To oppose the tactics of the 'bears,' makers are making strong efforts to combine in further restricting output."

Lead.—The sales foot up between 2000 and 2500 tons, beginning at 3½c., and running up to 3½c., closing at 3·60@3·62½c, and very strong, with an upward tendency and 4c. being talked of. The failure of Leadville to get railroad communication, and consequently the inability to handle ores low in silver and high in lead, which is the rule in that camp, has given the large holders an advantage which the consumers have been compelled to acknowledge. Under the head of "Gold and Silver Stocks" we give an estimate of what the smelting capacity of Leadville will be July 1st. Should all this be employed, and the ores carry but 20 per cent of lead, it would give over 100 tons of bullion per day.

Spelter and Zinc.—These are quiet, the former at 4¼@4½c., and the latter at 6@6½c.

Antimony is in moderate demand, at unchanged prices.

Quicksilver.—The San Francisco *Commercial Herald* of May 28th says : "There is no life to the market. Price, 35@35½c. By the steamer China, hence June 2d, for Hong Kong, Degener & Co. send 800 flasks.

THE BULLION MARKET.

NEW YORK, Friday Evening, June 6, 1879.

The silver market has advanced in London during the past week to 52¾d., mainly, as we understand, the result of a speculation based on the probable failure of the silk crop in Europe, and an advance in the China exchanges, together with the continued absence of Germany from the market as a seller. The market is now nominal—on a cessation of business—and we can not judge which way it may next move.

DAILY RANGE OF SILVER IN LONDON AND NEW YORK, PER OZ.

Date.	London	N. Y.	Date.	London	N. Y.
	Pence.	Cents.		Pence.	Cents.
May 31	51¾	113½	June 4..	52 5/8-3/8	115½
June 2.....	.....	113½	June 5..	52½	114¾
June 3.....	52¼	114½	June 6..	52	113⅝

BULLION SHIPMENTS.

We give below a statement showing the latest bullion shipments in addition to those announced in our issue of May 31st :

May 21st.	Northern Belle	Nev.	$2,401.25
" 21st.	Ophir	"	15,046.86
" 24th.	Alexander	"	8,757.39
" 26th.	Argenta.	"	11,000.00
" 26th.	Independence	"	8,000.00

The Standard Cons. shipped from May 1st to May 24th bullion to the amount of $103,283.

Horn-Silver Ore :	Lbs.
On hand May 17th	1,476,095
Received from May 18th to 24th	228,437
	1,704,532
Shipped to Chicago and Omaha	598,904
On hand May 24th	1,105,628

The entire Silver Reef bullion product to May 1st, 1879, aggregates $2,035,000.52.

Purchases of Silver by the Government.—WASHINGTON, May 30.—It is understood from the tone of Treasury officials that very little silver was offered the government at the weekly opening of bids on Wednesday, as they decline to state either the amount offered or purchased. It is a well-known fact that silver commands and has commanded for the past two weeks a higher price in San Francisco than in London, owing to a demand for China. It seems to be an established fact that Germany has ceased selling silver for the present. This, coupled with the demand for China and India, accounts for the advance in the price of silver both in London and San Francisco, and should the German government continue to withhold its silver from the market, the price will advance much higher. The Superintendent of the San Francisco Mint has been authorized by the Secretary of the Treasury to pay the equivalent of the London rate for silver, and as the price will probably rule a fraction higher in San Francisco than in London, it is doubtful whether the government will be able to procure much at the equivalent of the London rate.

The Director of the Mint states that the production of silver and gold in this country during the past year, as nearly as now can be ascertained, will show a large decrease as compared with that of last year. The production of gold and silver last year was $95,000,000, and the estimated production for the present year is $65,000,000, showing a decrease of $30,000,000, which is about equally divided between the two metals. The cause of the decrease in the silver production is probably accounted for by the falling off in the yield of the silver mines in this country. But while the supply of silver has been con-

siderably lessened, the demand has of late very perceptibly increased. Russia and Spain have both recently entered the silver market, and with the United States have become purchasers.

It is probable that the Senate action on the Warner Silver Bill will be deferred until the next regular session.

The Silver Question in England.—WASHINGTON, June 4.—Mr. Shepard, our Consul at Bradford, England, submits to the Department of State some observations on one of the questions now uppermost in England—the silver question. A petition to Lord Beaconsfield is in circulation favorable to a bimetallic currency, suggesting that a fuller legalized use of silver would benefit British industry and trade. This is adduced as an evidence of the uneasiness of English merchants on the subject.

Authority is given to the Paris mint to coin a trade-dollar for circulation in the East, particularly in the French colony of Cochin, China. It will be of exactly the same weight and fineness as the American trade-dollar.

Many well-informed persons consider the restoration by Germany of the bi-metallic system of coinage extremely probable.

U. S. Mint Coinage for May.—The coinage executed at the United States mints during the month of May was as follows:

Denomination.	Pieces.	Value.
Gold—		
Double eagles	138,490	$2,769,800
Quarter eagles	43,500	108,750
Silver—		
Dollars	2,330,000	2,330,000
Minor coinage—		
Five cents	400	20
Three cents	6,800	204
Cents	448,400	4,484
Total coinage	2,967,590	$5,213,258

May Coinage of the Philadelphia Mint.—PHILADELPHIA, May 31.—The total coinage at the United States Mint for the month of May was as follows: 1,795,090 pieces, valued at $2,094,508; of this amount there were double eagles, 39,490; silver dollars, 1,300,000; 5-cent pieces, 400; 3-cent pieces, 6800, and cents, 448,400.

New York Assay Office Operations for May.—The following is a statement of business at the United States Assay Office, at New York, for the month ending May 31st, 1879:

Deposits of gold	$855,000
Deposits of silver:	
Miscellaneous	$117,000
Colorado	75,000
Lake Superior	60,000
Montana	60,000
New Mexico	28,000
Utah	40,000
Arizona	1,000
Total deposits	$381,000
Grand total deposits	1,236,000
Gold bars stamped	572,603
Silver bars stamped	358,421
Total	$931,025
Transmitted to Mint of the United States at Philadelphia for coinage, gold	555,342

The specie exports from the port of New York for the week ending May 31st amounted to $352,100, of which $240,000 was in silver bars consigned to London bankers.

The Algeria, on the 4th inst., took out $250,000 gold coin. This is the first important shipment of gold from this country since the resumption of specie payments. It is not warranted by the current rate of demand sterling, taken in connection with the price of double eagles and the rate for money in London.

The Coin Balance of the United States Treasury, on the 31st ult., was as follows:

Gold coin and bullion	$136,680,260
Standard silver dollars	26,181,045
Fractional silver coin	6,813,589
Silver bullion	5,672,655
Gold certificates	33,580
Silver certificates	1,922,820
Nickel and minor coin	1,524,684

Salt Lake Ore and Metal Market.

The shipments of copper matte and bullion from Salt Lake City for the week ending May 24th were as follows: Four cars Mingo bullion to Pittsburg, three cars Chicago bullion to Pittsburg, one car Germania bullion to Pittsburg, two cars Germania bullion to Omaha, eleven cars Horn-Silver bullion to Omaha, seven cars Telegraph bullion to Omaha, two cars Morgan bullion to Omaha, one car Chicago bullion to Omaha, two cars H. M. and M. Company bullion to Omaha, one car Horn-Silver bullion to Chicago, and five cars copper matte to Baltimore, making thirty-nine cars bullion—706,163 lbs.; copper matte, 108,621 lbs. Total, 814,784 lbs. The last sale was fourteen cars of Old Telegraph bullion, that Prof. Holden had left over, to the Omaha Smelting and Refining Company; prices not made public. Our market is about $25 per ton for lead, $1.07 per ounce for silver, and $18 per ounce for gold. The water-wheel of the French Company's furnaces broke on Saturday, and in consequence the four stacks they had running froze up, entailing loss of time and money. With the exception of the Horn-Silver Company, the Germania is running one stack, Mingo one, Morgan one, and the Chicago one. The Utah Northern is now completed to Snake River, and is doing an immense business for a narrow gauge.

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, June 6, 1879.

The business in mining stocks is now confined to mines that have an actual or prospective merit, and during the week under review shows a very large business as regards the value. The number of shares sold is not so large as a few weeks ago, when the "fancies" were attracting considerable attention. The business in mining shares at the two Exchanges has amounted to about $1,350,000 this week. Outside of these dealings there have been a great many orders sent to San Francisco, and large amounts of the stocks of new companies have been taken by subscription and dealt in privately. Could this all be recorded, it would already be seen that our mining business is greater than that of San Francisco. Again, a large amount of the business that is recorded in the San Francisco transactions should properly be recorded here, and will be in time.

The Bodie stocks still continue to be the favorites. In the shares of the Bodie mine we note dealings aggregating 1707 shares, selling down to $39 on Saturday, up to $46½ on Monday, receding to $37 yesterday, but recovering to $38½ at the close to-day. There is nothing new in the developments of the mine to warrant a reaction if the advance was warranted.

Standard has been unusually active, the sales amounting to 19,900 shares, selling up to $35 on Monday, since when there has been a weakening tendency under an effort on the part of some parties to sell; touching $30¾ yesterday, recovering to $32 to-day, and closing at $31, ex dividend. The reports from the mine are all of the usual favorable nature.

Consolidated Pacific has been fairly active and irregular. The sales amount to 3735 shares at $8@$5½, closing at $6¾.

Bechtel has assumed some prominence, the sales amounting to 2445 shares, at $3@$2.25, closing at $2.50, seller 5.

Bulwer has been more largely dealt in than heretofore, the sales amounting to 3040 shares, although there has been a tendency to weakness, in sympathy with the whole Bodie list. $14½ was reached several times during the week, but a decline to $13¼ took place to-day, closing at $13½.

Tioga has been moderately dealt in, the sales amounting to 870 shares, at $4.25@$4.

Mono records but 150 shares, at $9.

There have been straggling transactions in Goodshaw, amounting to 1500 shares, at $1.50@$1, recovering again to $1.25 yesterday, without any dealings to-day.

Maybelle has ranged between 90c. and 70c., with sales of 1025 shares.

During Monday, 82 shares of McClinton were sold, at $1.

The Comstock mines have had very large dealings. California records sales of 3305 shares, at $6¾@$7¼. The sales of Consolidated Virginia amount to 5377 shares, selling from $6½ early in the week to $7¼ yesterday, and falling off to $6⅞ to-day, but closing at $7.

Up to Wednesday there had been dealings in Crown Point amounting to 900 shares at $5½@$6¼. Since then there have been no transactions.

Yellow Jacket records a sale of 10 shares, at $31. Alta sold at $8¼ on Saturday and $10¾ to-day, the total transactions amounting to 120 shares.

Consolidated Imperial has taken a very prominent position, the sales amounting to 32,885 shares, advancing from $1.60 on Monday to $2.20 on Wednesday, closing at $2.05. This stock has been a very active one in the San Francisco market, but has not of late shown any thing like the above-mentioned business.

Leviathan has been very sparingly dealt in at 80@75c., the sales amounting to but 900 shares.

Sutro Tunnel has not been so active, the sales only amounting to 4040 shares, at prices ranging from $4⅝ to $4¼, closing at $4⅜.

The mines of the Tuscarora District have been rather quiet.

Grand Prize records sales of 750 shares, at $3.75@$5. The transactions have been of a straggling nature.

Independence has shown considerable activity, the sales amounting to 3460 shares, advancing from $2.75 on Saturday to $4 on Wednesday, closing to-day at $3.80.

Leopard shows sales of only 200 shares, at $1@$1.25.

Hussey was dealt in at 15@10c., the transactions amounting to 1300 shares.

Navajo records sales of 1000 shares, at 29@30c.

Tuscarora shows sales of 5190 shares, at 11@13c.

In the Black Hills mines we note transactions in Homestake amounting to 2320 shares, at $37@$39¾, closing at $38½. In Caledonia the sales have been but 20 shares, at $4.90@$4.30.

Ontario shows 230 shares, at $39¼@39½.

Leeds has had dealings of 150 shares, at 80c.

Raymond & Ely records 125 shares, at $4.90@$5.

Tip Top shows dealings of 2100 shares, at 80c.@1.05.

At the New York Stock Exchange we note sales of 100 shares of Mariposa Preferred, at $7½, and of Common, 1000, at $6¾@$7⅞. Quicksilver, Common, has been dealt in to the extent of 580 shares, at $14½@$15½.

In the better class of stocks at the Mining Exchange there has been a very good business. Hukill has again assumed prominence, the control of the stock having passed into the hands of strong Californians, and the mine is underthe management of Col. Osbiston. We reported some time ago that this mine had made a good strike and was looking well. We learn that the mill will be rebuilt and numerous other improvements made, after which this mine will probably resume regular dividends. The transactions have amounted to 3305 shares, at $3.50 on Saturday to $4.75 on Monday, closing to-day at $4.20.

Leadville has had about the usual amount of business, the sales aggregating 11,092, at $3.55@$3.95, which were the extreme quotations of to-day. The closing price was $3.60.

Moose has been dealt in to the extent of 8650, at $3@3.50, closing at $3.10.

Plumas records sales of 1000 shares, at $3.40@$3.35.

Cleveland has been very active, the sales amounting to 10,600 shares, at $3@$3.35, closing at $3.25.

Trio records sales of 2800 shares, at 64@65c.

Findley has had sales of 9500 shares, at 60@52c.

New York & Colorado records 200 shares, at $1.45.

In the "fancies" at the Mining Exchange the dealings have been only moderate and as follows: American Flag, 1000 shares, at 21@20c.; Bertha & Edith, 28,800 at 31@27c.; Buckeye, 40,300, at 57@66c.; Dahlonega 6200 at 22@26c.; Gold Placer, 10,210 at 25@28c.; Granville, 42,000, at 25@33c.; Lacrosse, 3900, at 26@27c.; Luzerne, 7900, at 32@28c. A deal in Gold Placer is promised, it being reported that Californians are to furnish capital to develop the property.

The New York Mining Stock Exchange held its annual meeting on the 2d inst. at which the following were elected: President, Mr. George B. Satterlee; Vice-President, Mr. Henry C. Hardy; Treasurer, Mr. John Stanton, Jr.; Chairman, Mr. A. W. Peters; Secretary, Mr. John F. Scott; Assistant Secretary, Mr. Robert H. Gallagher, Jr.; Governing Committee—to fill vacancy, to serve one year—Mr. Henry S. Steele; to fill vacancies, to serve three years: Messrs. R. J. Kimball, William Gwynne, L. P. Bayne, Carl H. De Silva, E. L. Clarkson, R. K. Cooke. Finance Committee—Messrs. I. B. Newcombe, J. Wyman Morris, J. A. Macpherson, H. A. Hurlbut, Jr., George H. Kennedy. Membership Committee—Messrs. A. J. F. Van Deventer, Rensselaer Weston, A. L. Faris, J. W. Burnham, Louis Haight, W. M. Sutton, Heber Dunham. Committee on Securities—Messrs. Spencer Trask, Frederick Hardy, H. J. Rogers, P. K. Dickinson, E. S. Munroe, W. W. Hanly, Charles Minzesheimer.

The Ontario Silver Mining Company has declared its dividend of fifty cents per share for May, payable at Wells, Fargo & Co.'s on the 16th. Transfers close on the 10th. This makes the forty-fourth dividend declared by this very successful company.

The production of the Ontario mine for the month of May was $116,873.13, assay value. Certain improvements are to be made which will increase the production about $60,000 per month. There is plenty of ore, but not sufficient milling facilities. These improvements should permit the company to resume its extra dividends.

The following is an estimate of what the daily smelting capacity of Leadville will be July 1st:

	Tons of ore.
1. J. B. Dickerson & Co.	40
2. The Lizzie Furnace	80
3. Abby Smelter	25
4. Chicago Reduction Works	100
5. Billings & Eilers	100
6. American Smelter	50
7. Berdell, Witherell & Co.	90
8. Leadville Smelting Co.	40
9. J. B. Grant & Co.	100
10. The Adelaide	25
11. Little Chief	25
12. Ohio and Mo. Smelter	25
13. Commings & Finn	60
14. Gage Hagaman	25
15. Raymond, Sherman & McKay	35
16. The Elgin Smelter	25
17. Harrison Works	100
	945
Deduct, say 25 per cent.	236
	709

Should the ore average $60 per ton, it would give a daily product of about $42,500, or a monthly product of $1,275,000.

A telegram from the manager of the Little Pittsburg group of mines, at Leadville, dated June 5th, says: "Our shipments continue to average over 100 tons daily. Mines looking well. Pittsburg improving. Found good body of ore between numbers two and three shafts, along Amie line north, Workings in Winnemuc continue to look and act well. Iron ore on old dumps netting more than I estimated in my report. Had settlement to-day for seventy-two tons, which netted over $28 per ton." We hope to be able to express the views of Dr. Raymond in our next. The majority of gentlemen who visited the mine have returned, and express great satisfaction with it.

A telegram from the Plumas mine, dated June 4th, says:

"West drift in lowest level of Plumas National has struck a rich body of ore. Mine is looking well generally."

A telegram from the Penobscot mine, dated June 2d, says:

"May clean-up (run about 20 days) $16,000;" $5 bid for a large lot of this stock.

The stock of the Caribou Consolidated Mining Company is in good demand, at $6 per share. There have been nearly 40,000 shares of the stock sold. Mr. Brayton Ives is momentarily expected to return from a visit to the mine. He telegraphs that he found it all that it was represented to be, and is very much pleased. The profits in May were sufficient to pay a dividend of $10,000 and leave a surplus of several thousand dollars. A dividend will be declared next week.

The Dunderberg Mining Company has taken full possession of its mines, and is now working them; $4.25 is bid for the stock.

The Utah Southern Extension has opened up the first section (32 miles) to Chicken Creek. The road is graded from this point toward the Horn-Silver mine, about 30 miles. The stock of this mining company is selling freely at $18.50 per share. Another stack (making three in blast) will probably be in operation by July 1st.

We make the following extract from the letter of C. G. Rogers, Superintendent of the Green Mountain Gold Mining Company, dated May 24th, to the office in this city: "I am cross-cutting the sulphurets in the lower tunnel, and have every indication of striking a chute of ore in it very soon. The fact is, it is hardly worth while to do much more prospecting in this mine, for there is already more quartz in sight than any of us will live to see worked out."

This company has declared a dividend of 5 cents per share. A reorganization was effected yesterday under the laws of this State.

The Silver Cliff Mining Company, of Rosita District, Custer County, Colo., has just been incorporated under the laws of the State of New York with a capital of $10,000,000, consisting of 200,000 shares of a par value of $50 each. The president of the company is James R. Keene, and the following are the board of directors: John P. Jones, Jacob Lorillard, John W. Gashwiler, Robert L. Cutting, James H. Banker, Samuel W. Boocock, George L. Rives, Isador Wormser. The prospectus, including the report of J. D. Hague, will be issued on Monday, which will give all the information regarding the mine.

A recent number of the Gold Hill *News* contained the following:

"Very many of the Comstock dealers in mining securities express themselves strongly in favor of listing all our mines on the New York Board. The recent start there taken in speculation in mining securities, they contend, demands such a step. Stocks are eagerly sought after there, and with a rapidly increasing demand; and when once a development is made and securities advance, this demand will grow so furiously that it will be found almost impossible to satisfy it.

"Again, the field there is ample and capital abundant. With developments to back an advance, the men and the means are at hand there to float the whole Comstock—a thing which has seemed to be impossible of late on the Coast."

REVIEW OF THE SAN FRANCISCO MARKET.

A number of the San Francisco quotations are somewhat below the prices prevailing a week ago, though in many instances a slight improvement has taken place, and on the whole the advance noted in our last is fairly maintained. The enlarged totals in the dealings show increased interest, but it is noticeable that there is more conservatism in this than in times past, when a bonanza, however slight, would set the market booming. Whether this is influenced by the effects of the newly-adopted constitution, or through the gradually increased operations on this market to a proportionate withdrawal from San Francisco, we can't say.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

Name of Company	Closing Quotations. May 30.	May 31.	June 2.	June 3.	June 4.	June 5.	Opening. June 6.
Alpha	23¾	23	25¾	26	27	28½	28½
Alta	9	8¾	9⅞	9⅞	9¼	9½	10½
Argenta	..	..	..	..	..	..	..
Bechtel	..	..	..	..	2½	..	..
Belcher	5⅝	5⅝	5¾	5¾	5½	5½	5⅝
Belle Isle	..	..	..	..	..	..	..
Benton	..	..	..	..	..	..	..
Best & Bel.	21½	20	21	21	20⅜	21	20½
BlackHawk	..	..	..	..	..	..	..
Bodie	37½	40	40	38	39½	38¾	38
Booker	..	..	..	..	..	..	..
Bullion	7⅝	7¼	7⅝	8	7⅞	8¼	..
Bulwer	..	..	..	..	13¾	..	..
Caledonia	..	..	..	..	2¾	2⅞	3
California	6½	6⅝	6¾	6¾	6¾	6¾	6¾
Chollar	8½	8	8⅞	9	8⅝	8¾	8½
Confidence	..	..	..	..	15¼	15¾	..
Con. Imp	1⅝	1⅝	1¾	1⅞	1⅞	1⅞	2
Con. Pacific	..	..	..	..	*7½	6½	6¼
Con. Va	6⅝	6¼	6¾	6¾	6¾	6⅝	6¾
Crown P'int	5⅞	5⅝	5⅞	5⅝	†5⅝	5⅝	..
Endowm'nt	..	..	..	..	..	..	..
Eureka Con	18½	18¼	18	17¾	17¾	17¾	..
Exchequer	8½	8	8½	8¾	9½	9⅝	..
Goodshaw	..	..	..	..	..	..	12½
Gould & Cur	12⅛	11¼	13	12⅞	12⅝	12¼	..
Grand Prize	3½	3½	4½	4⅜	4¼	4¼	..
Hale & Nor.	16¼	15⅞	17¾	18¼	18⅜	17¾	..
Hamburg	..	..	..	..	..	..	..
Homestake	..	..	..	..	..	..	..
Hussey	..	..	..	..	..	..	3¾
Indep'd'nce	..	..	..	..	3.90	3.75	..
Jackson	..	..	..	..	..	..	..
Julia Con.	4½	4⅜	4½	4⅝	4½	4½	4½
Justice	3⅞	4	4½	4¾	4⅝	4	4½
Kentuck	..	..	..	..	5⅜	5½	..
Kossuth	..	..	..	..	..	..	..
Leopard	..	..	..	..	..	..	..
Leviathan	..	..	..	..	90	75	90
Manhattan	..	..	..	..	..	..	..
Mar. White	..	..	..	..	..	6	6
McClinton	..	..	..	..	..	..	..
MeadowVal	..	..	..	..	..	..	..
Mexican	43	42¼	44	44¾	44¼	44¼	44
Mono	8¾	8¾	8½	8½	9¼	8¼	..
Navajo	..	..	..	..	..	..	..
North. Belle	6⅞	..	7	7	7	7	..
Ophir	38½	38	39¼	38¼	37¼	37¾	37¼
Orig. K'ys'e	..	..	..	..	..	..	..
Overman	12	10½	11¾	11⅞	11¼	11	..
P. Sheridan	..	..	..	..	..	..	..
Potosi	5⅞	5½	5½	5⅞	6	6⅛	6⅛
Ray. & Ely	5¼	6½	6½	4¼	4½	4⅝	..
Richer	..	..	..	..	..	..	..
Savage	16	15	16⅝	16¼	16½	16½	17
Scorpion	..	..	..	..	3⅜	..	3½
Seg. Belcher	..	..	..	..	*27	..	27
Sierra Nev.	52	52½	53¼	54	54½	54	54
Silver Hill	..	..	..	..	2¾	2⅞	2¾
Silver King	..	..	..	..	..	..	..
Summit	..	..	..	..	..	..	..
Tioga	..	..	..	..	..	..	3½
Tip Top	..	..	..	..	..	..	..
Union Con.	89	89¾	93½	92	93	‡91	91
Utah	..	..	..	..	28	27	27
Ward	..	..	..	..	..	..	..
WashoeCon	..	..	..	..	..	..	..
Wells Fargo	..	..	..	..	..	..	..
Yel. Jacket	19¼	20⅜	21½	20⅝	20¾	20⅜	..

* Opening. † Assessed $1. ‡ Assessed $2

Alpha opens at an advance of $4½ per share.

Alta shows some improvement. The various levels above the 1550 station of this mine are being put in order preparatory to cross-cutting and opening up the ore-vein.

Recent sales of Argenta have been made in San Francisco at 75c. to $1.50 per share. This company is making satisfactory shipments. A recent run of 8 days showed a product of nearly $16,000. Very rich ore has been encountered on the 300-foot level, between the main shaft and the Grand Prize mine. The stopes are looking well throughout the mine, and are yielding sufficient ore to keep the mill steadily running.

In the Addenda mine, the ledge matter in the drifts, both north and south on the 460-foot level, has materially improved in appearance; it is much more compact and metalized. The main shaft has nearly reached the 500-foot station.

Bechtel has been quite active on the San Francisco market at $1.55@$2.25, which is quite an advance on the recent quotations. The principal work in this mine is confined to drifting south on the 300 and 400-foot levels, each of the drifts being nearly 400 feet in length. Fine ore is encountered in the drift on the 300-foot level, and the indications in all parts of the mine are promising.

The Belmont, a Nevada mine, showed 2½ feet of ore in the drift on the 300-foot level, which assays $10 to $15 per ton. The stock of this company shows a slight advance on previous quotations, recent sales in San Francisco being made at 40c. per share.

Belcher is steady. The bottom of the incline in this mine is 2760 feet perpendicularly below the surface, besides the 31 feet on the slope. The incline starts from the 900 level, and has therefore made 1860 feet perpendicularly to the station now being cut out. It has a dip of 36 degrees, and consequently has to be run 170 feet on the slope to make 100 feet perpendicularly. The cable in use in the incline in this mine is 4700 feet long. It requires of this 4093 feet to reach from the surface to the bottom of the incline.

Best & Belcher is slightly lower. Active work is going forward in all parts of this mine The Osbiston shaft is down nearly 600 feet.

Black Hawk has shown considerable activity in San Francisco at lessening prices. The winze working between the 220 and 320-foot levels is down 60 feet in fine ore. Other parts of the mine are reported as looking well.

Bodie is lower, opening to-day at $38, against $42¼ a week ago; active work is going forward at this mine.

Booker, a Bodie mine, has shown considerable activity on the San Francisco market at 35c. to 70c. per share, an advance from previous prices. The main shaft of this mine is finished to the 203-foot level, and is now ready for the new machinery for which the foundation has been nearly completed.

Bullion closed yesterday at $8¼, an advance of $1¼ for the week.

Bulwer has been sparingly dealt in on the San Francisco market, at well-maintained prices. The north drift on the Stonewall ledge is now in over 70 feet. The ledge is from 2 to 3 feet wide in fine ore. The south drift is extended over 70 feet, and the ledge is 2½ feet in width and looking well. This work is on the 400-foot level. The drift on the 300-foot levels, south, is in 160 feet in good ore.

Caledonia is up to $3 per share. The Foreman shaft is down 20 feet; the water decreasing in the mine.

Chollar is steady. The water in the Chollar-Norcross shaft is rising at the rate of 2½ feet per week.

Consolidated Imperial has materially advanced, opening to-day at $2, against $1.65 a week ago.

The north drift on the 2600-foot level of this mine has been advanced to 400 feet. The entire face is in quartz carrying light assays. North drift, same level, has been graded and timbered 240 feet, leaving 960 feet yet to be done.

Consolidated Pacific is lower. The main shaft of this mine is down 250 feet, in excellent formation, and the outlook in all parts of the mine is reported as very promising.

The old bonanzas show some improvement. The present output from the Consolidated Virginia mine is about 130 tons of ore per day. The south drift, 2150 level, of this mine is making 4 feet per day, through a promising formation of vein matter, its face about 100 feet from the starting-point.

The average yield from the California is about 180 tons per day. The flow of water at the bottom of the C. & C. shaft is quite strong.

Crown Point is slightly lower. This company is drifting on the 2500 level along the wall of the ledge. The incline has reached the 2700 level.

Eureka Consolidated stock is lower, closing last night at $17¾, against $18 a week ago. For the week ending May 24th there were completed 181 feet of drifts, winzes, and inclines. Three furnaces are now running, turning out the usual quantity of bullion.

Exchequer shows an advance of $1 per share. The north drift, 2400 level, of this mine is in 432 feet, the face in a fine vein formation of porphyry and quartz, giving low assays, and carrying some water. The drift is being run along the vein as a base for future cross-cuts.

Gould & Curry is steady.

Grand Prize shows some improvement, which has been steadily maintained during the operations of the present week. The outlook in this mine is said to be encouraging.

Hale & Norcross is steady. The drift east, 1640 level of this mine, has connected with the Julia branch of the Sutro Tunnel; total length, 208 feet. The pumps above the Sutro Tunnel level have all been removed.

Hamburg shows no change in price, and appears to be almost neglected in the San Francisco dealings. This company continues shipments to the Richmond furnaces. The ore-body near the old Hamburg shaft looks well, and is yielding ore of very good quality. Seams of low-grade ore are encountered in the west cross cut of the 600-foot level, which is in over 300 feet.

Highbridge shows a slight decline in prices. A recent letter from this mine says that it is looking well.

GENERAL MINING STOCKS.

Dividend Paying Mines.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	SHARES. Par Val	ASSESSMENTS. Total levied to date.	ASSESSMENTS. Date and amount per share of last.		DIVIDENDS. Total paid to date.	DIVIDENDS. Last Dividend.		DIVIDENDS. Rate p. An	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. May 31. H.	May 31. L.	June 2. H.	June 2. L.	June 3. H.	June 3. L.	June 4. H.	June 4. L.	June 5. H.	June 5. L.	June 6. H.	June 6. L.	SALES.
Alps	Nev.	800		30,000		204,000	Aug. 1878	$1 00	37,500	Apr. 1876	$0 05														
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,496,200	Feb. 1879	1 00	15,397,200	Apr. 1876	1 00														
Bobtail, G.	Col.	2,500	1,136,630	227,326	5	*			90,930	Nov. 1878	15														
Bobtail Tunnel, G.	Col.		100,000	20,000	5	52,000	July 1873	0 30	36,000	Dec. 1878	40														
Bodie, G.	Cal.		5,000,000	50,000	100	75,000	May. 1879	1 00	800,000	Jan. 1879	1 00		41	39	46½	40	46	42	44	40	39	37	38¼	38	1,707
California, G. S.	Nev.	600	54,000,000	540,000	100				30,510,000	May. 1879	50		7⅛	6⅞	6¾		7	6¾	7	6¾	7¼	6⅞	7¼	7	3,305
Calumet & Hecla, C.	Mch		2,000,000	80,000	25	1,200,000			14,250,000	May. 1879	5 00				178		179								24
Central, C.	Mch		500,000	20,000	25	100,000	June 1862	0 65	1,340,000	Feb. 1879	4 00														
Chollar, G. S.	Nev.	700	11,100,000	112,000	100	1,750,000	Sept. 1878	5 00	3,060,000	Feb. 1872	1 00														
Copper Falls, C.	Mch		1,000,000	20,000	50	535,000	May. 1876		100,000	Nov. 1871	1 00							1¾							100
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,600	June 1873	3 00	41,040,000	May. 1879	50		7	6⅝	6¾	6½	7	6¾	7	6¾	7½	6⅞	7	6⅞	5,377
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	256,320	Apr. 1878	0 50	78,000	May. 1865	8⅓														
Cons. Her. & Roe	Col.	16,500	1,000,000	100,000	10	*																			
Crown Point, G. S.	Nev.	600	10,000,000	100,000	100	2,073,370	June 1878	1 00	11,588,000	Jan.. 1875	2 00		6¼		6	5½	6½	6⅝	6⅛	6¼					900
Daney	Nev.	2,000		108,000		91,800	Nov. 1878	0 20	56,000	July 1863															
Eureka Cons., G. S. L.	Nev.		5,000,000	50,000	100	100,000	May. 1876	1 00	3,650,000	Apr.. 1879	1 00														
Eureka G. Mg., G.	Cal.	1,680	2,000,000	20,000	100				2,149,000	Apr. 1878	0 25														
Findley, G.	Geo.		200,000	200,000	1				8,000	May. 1879	1c						52c		60c	53c	55c	53c	55c	54c	9,500
Franklin, C.	Mch		500,000	20,000	25	360,000	June 1876	5 00	585,000	Nov. 1871	1 00				8		8		8						150
Gila	Ariz			100,000		70,000	Jan. 1879	0 25	50,000	Aug. 1875	0 25														
Gould &Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,936,000	Mar. 1879	1 00	3,826,800	Oct. 1870	10 00														
Grand Prize	Nev.	1,500		100,000		100,000	July. 1878	1 00	400,000	Feb. 1878	1 00		3.80	3.75			4.35		5	4.75	4.50				750
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	3,082,000	Mar. 1879	1 00	1,598,000	Apr. 1871	5 00												18		100
Homestake, G.	Dak		10,000,000	100,000	100				15,000	May. 1879	30		38	37	39½	39½	39¾	39	39½	39¼	39½	38½	38½		2,320
Hukill, G. S.	Col.	3,288	1,000,000	100,000	10	*				Dec. 1878	0 10		4.50	3.50	4.75	4.40	4.50	4.35	4.50	4	4.40		4.50	4.20	3,305
Independence	Nev.	1,500		100,000		75,000	Feb. 1878	15	150,000	Nov. 1878	25		2.80	2.75	2.90		3	2.95	4	3	4	3.80	3.80	3.65	3,460
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	300,000	Aug. 1878	1 00	1,252,000	Mar. 1870	5 00														
K. K. Cons.	Nev.			50,000		300,000	Jan.. 1879	1 00	50,000	Sept. 1873	0 25														
Leadville	Col.		2,000,000			*			40,000	May 1879	10		3.80	3.70	3.75	3.60	3.75	3.60	3.90	3.55	3.90	3.65	3.95	3.65	11092
Leeds	Uth	3,000		60,000					78,000	Oct.. 1878	0 15				80c		80c								150
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	225,000	Mar. 1879	50	162,500	Dec. 1876	0 50		1				1.25								200
Manhattan	Nev.			50,000		50,000	Oct.. 1878	1 00	400,000	Feb. 1877	1 00														
Merrimac, S.	Mas.	1,500	500,000	100,000	5	*	June		120,000	Mar.															
Minesota, C.	Mch.		1,000,000	20,000	50	436,000		1869	1 00	1,820,000	Mar. 1876	0 50													
Modoc	Cal.	4,000		100,000		450,000	Feb.. 1879	0 50	50,000	Dec. 1876	0 50														
Moose	Col.	39,000	2,000,000	200,000	10	*			550,000	Mar. 1878	0 25		3		3.50	3	3.50	3.35	3.15	3.10	3		3.10	3	8,650
National, C.	Mch.		500,000	20,000	25	195,000	Oct.. 1875	1 00	360,000	Oct 1873	1 00														
N. Y. & Colorado, G.	Col.		1,000,000	50,000	20	*			20,000	Mar. 1877	0 20				1.45										200
Northern Belle, S.	Nev.	1,600	5,000,000	50,000	100				1,425,000	Feb. 1878	1 00														
Ontario	Uth.	3,000	10,000,000	100,000	100				2,150,000	May. 1879	50				39¼		39½								230
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	3,436,800	Nov. 1878	1 00	1,394,400	Mar. 1864	4 00														
Osceola, C.	Mch.		1,000,000	40,000	25	880,000	Mar. 1876	2 00		Nov. 1878	1 00						15								25
Pewabic, C.	Mch.		500,000	20,000	25	185,000	June 1868	3 00	460,000	July 1873	1 00														
Potosi, G. S.	Nev	700	11,000,000	112,000	100				§																
Phœnix, C.	Mch.		1,000,000	20,000	50	817,500	Sept. 1870	3 00	10,000	Dec. 1876	1 00														
Plumas	Cal.		1,000,000	100,000	10				146,000	June 1879	8		3.40		3.40		3.40		3.40	3.35	3.40	3 35			1,000
Quincy, C.	Mch.		200,000	20,000	10				2,230,000	Feb. 1878	5 00														
Raymond & Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	800,000	Apr.. 1879	1 00	3,075,000	Sept. 1873	3 00		4.90								5				125
Ridge, C.	Mch.		500,000	20,000	25	200,000			90,000	Feb. 1875	1 00														
Rye Patch	Nev.	1,600		30,000		157,500	Dec.. 1878	1 00	105,000	Dec. 1877	0 25														
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10				250,000																
Savage, G. S.	Nev.	800	11,200,000	112,000	100	4,196,500	Feb. 1879	1 00	4,460,000	June 1869	3 00														
Seaton, G. S.	Col.	1,700	500,000	50,000	10	*				May 1877	0 10														
Sierra Nevada, G. S.	Nev.	3,650	10,000,000	100,000	100	2,550,000	Apr.. 1879	2 00	102,000	Jan. 1871	1 00														
Silver Islet	Mch																								
Silver King	Ariz	1.500	10,000,000	100,000	100				450,000	Nov. 1878	0 50														
Standard	Cal.		10,000,000	100,000	100	50,000	July 1878	1 00	1,100,000	May. 1879	0 50		34¾	34½	35	34¼	34⅜	33	34¼	33⅜	33½	30¾	32	30⅞	19900
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	4,038,000	Apr.. 1879	1 00	2,184,000	Aug. 1871	2 50						21								10
McClinton	Cal..	1,000		60,000		45,000	Dec.. 1878	0 25							1										82

Non-Dividend Mines.

Allouez, C.	Mch.		1,000,000	20,000	50	940,000	May	1876	5 00																		
Alpha, G. S.	Nev.	306	3,000,000	30,000	100	240,000	Mar.	1878	1 00																		
Alta	Nev.	600		108,000		1,101,000	Feb.	1879	1 00						8¼											10¾		120
Am. Flag, G.	Col.	5,300	600,000	60,000	10	*											21c	20c									1,000
Andes	Nev.	2,000		100,000		355,000	Oct.	1878	0 25																		
Baltimore Cons.	Nev.	1,050		84,000		1,015,000	Apr.	1878	0 50																		
Benton	Nev.	600		108,000		91,800	Dec.	1878	0 50																		
Bechtel	Cal.			60,000		96,000	Apr..	1879	0 25						3	2.70	3	2.80	2.75	2.60	2.75	2.60	2.50		2.50	2.25	2,445
Bertha & Edith. G.	Vir.	645 acs.	500,000	500,000	10	*									31c	30c			30c	28c			30c	28c	31c	27c	28,800
Best & Belcher, G. S.	Nev.	545	10,080,000	100,800	100	639,390	Apr..	1879	1 00																		
Boyle	Nev.	600		108,000		16,240	Aug.	1878	0 15																		
Buckeye	Col.		2,000,000	400,000	5	*									66c	61c	63c	60c	62c.	57c	60c	58c	57c	55c	59c	55c	40,300
Bullion, G. S.	Nev.	943½	10,000,000	100,000	100	3,002,000	Dec.	1878	1 00																		
Bulwer															14½	13⅞	14	13¾	14½	13⅞	14½	14¼	14¼	13½	13½	13¼	3,940
Cal. B. H.															4.90						4.80						20
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,640,000	Apr.	1879	0 50																		
Cashier	Col.		500,000	250,000	2	*																					
Challenge	Nev.	90		50,000		10,000	Nov.	1878	0 20																		
Cleveland, G	Col.	3,715	250,000	25,000	10	*									3.05	3	3.15	3	3.20	3.10	3.10		3.25	3.15	3.35	3.20	10,600
Cons. Imperial, G. S.	Nev.	468	50,000,000	500,000	100	875,000	Feb..	1879	0 20						1.80	1.70	1.75	1.60	2	1.85	2.20	1.95	2.10	2	2.10	2	32,885
Con. N. Slope & E. T. C.	Col.	15,000	500,000	10,000	50	*																					
Con. Pacific	Cal.	1,400		60,000											8	5½	7¾	6½	8	7¼	7¾	7	7½	6¾	7	6½	3 735
Dahlonega	Ga.		250,000	250,000	1	*											24c	23c	23c	22c	24c	22c	23c				6,200
Dana, C.	Mch.		500,000	20,000	25	68,000	Jan..	1863	0 50																		
Dawson, S.	Ont.		1,200,000	60,000	20			1878																			
Day	Nev.	1,500		100,000		70,000	Feb..	1879	0 15																		
Dayton	Nev.	1,600		100,000		750,000	Apr.	1878	0 25																		
De Frees	Ariz	1,500		100,000		115,000	Oct..	1878	15																		
Duncan, S.	Ont.		1,200,000	60,000	20	75,000	July	1876	413⅛								4⅜										200
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	480,000	Feb..	1879	1 00																		
Gold Placer, G.	Col.		5,000,000	200,000	25																						
Granville, G.	N. C.	357 acs.	1,000,000	100,000	10	*									28c	25c	27c	25c	26c	25c	28c	28c	27c	25c	25c		10,210
Humboldt, C.	Mch.		500,000	20,000	25	100,000	Sept	1878	0 15										30c	23c	29c		29c	28c	28c	27c	42,000
Hussey	Nev.	4,500		100,000		110,000	Jan..	1879	0 15						15c	10c			11c		10c						1,300
International, S.	Ont.		1,200,000	60,000	20																60c						100
Julia, G. S.	Nev.	3,000	11,000,000	110,000	100	872,500	Jan..	1879	1 25																		
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,763,500	Jan..	1879	1 00																		
King's Mountain, G.	N. C.		1,200,000	120,000	10	*																					
Kossuth	Nev.	2,700		108,000		421,200	Aug.	1877	0 15																		
Lacrosse	Col.	3,900	1,000,000	100,000	10	*													26c		27c		27c	26c	27c	26c	3,900
Leviathan	Nev.	2,000		100,000		265,000	Mar.	1879	25								80c	75c	75c								900
Luzerne	Col.	4,200	5,000,000	500,000	10	*									29c	28c	30c	28c	29c	28c	31c	30c	32c	30c	32c	31c	7,900
Madison, C.	Mch.		500,000	20,000	25	123,000	Sept	1876	0 10																		
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00																7⅞	7	100
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June	1878	1 00						7	6¾			7⅞	7	7½						1,000
McCracken	Ariz	4,500		100,000		100,000	Oct.	1878	0 50																		
Martin White	Nev.			100,000		650,000	Dec.	1878	1 50																		
Mesnard, C.	Mch.		500,000	20,000	25	160,000	Apr.	1876	0 50																		
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	217,400	May.	1878	0 50																		
Minnietta Belle	Cal.	1,500		100,000		75,000	Apr.	1878	0 50																		
Mt. Bross Tunnel	Col.	8,600	2,000,000	200,000	10	*		1878																			
Navajo	Nev.	1,500		100,000		145,000	Feb..	1879	0 20										30c	29c	29c				35c	29c	1,000
New York	Nev.	1,000		100,000		800,000	Feb..	1879	0 40																		
Occidental	Nev.	1,700		40,000		72,500	Feb.	1877	0 25																		
Orig. Keystone	Nev.	1,500	1,000,000	100,000	10	100,000	Apr.	1879	0 50																		
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	3,404,280	Jan..	1879	3 00																		
Petherick, C.	Mch.		500,000	20,000	100	165,533	Mar.	1876	0 50																		
Pleasant View, G.	Col.	1,200	200,000	20,000	10	*																					
Quicksilver preferred	Cal.	8,500	4,291,300	42,913	100	*																					
" common	Cal.	acres.	5,708,700	57,087	100	*													14½		15¼		15⅜	15	15⅛		550
Rockland, C.	Mch		500,000	20,000	25	495,000	Jan..	1874	1 00																		
Seg. Belcher, G. S.	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00																		
Silver Hill, G. S.	Nev.	5,400	10,800,000	108,000	100	1,404,000	Apr.	1879	0 50																		
Silver Prize	Nev.	1,500		100,000		65,000	Feb	1879	0 25																		
Star, C.	Mch.		500,000	20,000	25	265,000	Mar	1876	0 50																		
Superior, C.	Mch.		500,000	20,000	25	340,000	Mar	1878	0 25																		
Sutro Tunnel	Nev.		20,000,000	2,000,000	10				0 50						4⅝		4⅜		4⅝		4⅝		4⅜	4⅛	4⅜		4,040
Tiptop	Ariz			100,000		120,000	July	1878							80c				90c		90c		1.05	1.00	1.05		2,100
Tioga	Cal.	1,500		100,000		80,000	Apr.	1879	0 20						4				4.25	4.20	4		4		4		870
Trio	Col.	1,250	150,000	150,000	1										65c								65c	64c	65c		2,800
Trojan	Nev.	1,500		100,000		265,000	Apr.	1879	0 25																		
Tuscarora	Nev.			100,000		25,000	Mar.	1879	0 05						12c		12c		12c	11c	12c		12c		13c	11c	5,190
Union Cons. G. S.	Nev.		10,000,000	100,000	100	660,000	Jun..	1879	2 00																		
Utah	Nev.	1,000		20,000		830,000	Apr.	1879	2 50																		
Ward	Nev	1,200		110,000		99,000	Jan..	1879	0 30																		
Wells Fargo	Nev.	1 500		108,000		243,000	Apr.	1879	0 50																		

G. Gold. S. Silver. L. Lead. C. Copper. * Non-Assessable.

Total Assessment levied to date **$66,173,613**
Total Dividends paid to date **$155,288,330**
Total Shares sold duringthe week 288,862

The Independence mine has shown increased activity recently, with slight improvement in the quotations. The north drift on the 300-foot level of this mine is now in nearly 100 feet. The ledge looks well, and the seam of ore encountered is high-grade. The The south drift, on the same level, is in 170 feet, and the last 50 feet run shows ore of low grade. The mill is constantly running, being supplied with ore from the chloride stopes. New ore-house is completed, and is now being filled with sulphuret ore from the 300-foot level.

The ore-dumps in the Jackson mine are full, and dead-work is the order of the day until the Metamoras furnace starts up, which will be soon. This stock has been sparingly dealt in on the San Francisco market, at $6@$5.75 per share.

Julia is steady. The extreme heat in this mine continues, rendering progress very slow.

The Waller-Defeat shaft of the Justice mine is yielding 30 tons per day of first-class ore and 25 tons per day of second-class ore. The stopes look well and indicate a large body of ore. This stock is fairly maintained.

Kentuck is steady.

The Leopard, a Tuscarora mine, shows considerable activity in San Francisco recently at lessening prices. The main drift on the 700-foot level of this mine is in 311 feet. There are bunches and seams of good ore mixed through the face, and some water is coming in. Hoisting ore, samples of which average $98.95. The stopes are being opened as rapidly as possible.

Leviathan shows no change either in price or otherwise.

Manhattan shows no change of any moment in the San Francisco dealings. The transactions have been unimportant. The management of this mine is a disgrace to all honest mine administration, and it is becoming a common occurrence to note the same feeling expressed by our contemporaries of the Pacific Coast. We do not now even get a report of the company's output, though that it is producing, and largely, too, is notorious.

We note a recent sale of Martin White on the San Francisco market at $6.75 per share. The dividend recently declared by the company of 30c. per share was its first. It is supposed that this mine is now on a paying basis; but its stockholders have been called upon previous to this for $650,000 in assessments. Martin White has brought suit against the managers of the company for the recovery of 45,000 shares of the stock of the company, and $65,000 cash, on account of the alleged failure of the defendants to pay off the indebtedness of the corporation, according to agreement, and for assessments stated to have been wrongfully exacted from plaintiff.

Mexican and Ophir. The former stock shows a slight improvement, while Ophir is lower. This latter company is hoisting 90 tons of ore per day, and is pushing its incline down at the rate of two feet per day, the bottom 68 feet below the 2300 station, and has during the week cut streaks of clay and veins of porphyry dipping east. The bottom continues in quartz, yielding low assays.

The joint Union winze of the 1600 level of the Mexican mine has encountered a very strong flow of water, which makes sinking very slow.

The McClinton, a Bodie mine, has been very active in San Francisco, late sales having been made as high as $1.25 per share. This company is cross-cutting on the 500 and 600-foot levels, east on the 500-foot level and east and west on the 650-foot level. Rock is very hard and progress slow.

Mono closed yesterday at a slight decline. Nothing special from the mine. The water is reported as less troublesome.

The ore-vein in the 250-foot level of the Navajo mine is producing well. On the 150-foot level, the ore stopes are reported to be 14 inches wide and looking well.

Northern Belle is steady, and continues its usual shipments.

Overman has improved somewhat, the water decreasing in the mine. The Foreman shaft is timbered to the 700 level.

The Paradise mine has been selling in San Francisco recently, at $1.25 to $1.50 per share. This company is now doing nothing outside of running a prospective tunnel, it having sufficient ore on its dump to run the new mill several months.

Raymond & Ely has been quite active in San Francisco, at decidedly improved prices. Yesterday the stock closed at $4⅝, a slight advance on the price as in our last, but quite a decline from the principal prices of the week. This mine looks very well on the 8th to the 10th level, and yields a fair quantity of good ore. The mill started up on May 21st, and it is thought that the April output will be exceeded. It is stated that a movement is on foot to consolidate the Meadow Valley and the Raymond & Ely mines, and in the event of the arrangements being made, valuable ground between Number 5 of Meadow Valley, extending as far as the Lightner shaft, will be opened up. In the winze, 1200 feet west of the Lightner shaft and 100 feet below the drift, the vein has been crost-cut and a vein forty feet wide exposed, that assays very large.

Savage opens to-day at $17—a slight advance. The water in this mine is also slowly advancing.

The new bonanzas are up. Sierra Nevada opened to-day at $54, and Union Consolidated at $91. The Mariposa mill is now running on Sierra Nevada ore, crushing 40 tons per day. The mine is yielding 65 tons, which could be easily increased to 100 tons, if there were milling facilities. The flow of water in this mine amounts to 125,000 gallons per day. It is, however, readily handled since the three new pumps are in place in the east shaft, and are working well. It is thought that the Union Consolidated mine will soon need a mill. The Sierra Nevada is running sill floors and opening out stopes directly toward the line, and before a great while Union will simply take up the work and carry it on. This will make the North Consolidated Virginia shaft of great use, but it must first be pushed to the 2200 level, it being now only 72 feet below the 1700 level.

Silver Prize, a Tuscarora mine, is coming into prominence, two bullion shipments having been made recently and a good outlook reported from the mine. Slight dealings in this stock were made in San Francisco recently at 45c. per share.

Tioga continues to improve in San Francisco, and shows considerable activity in the market, late sales having been made at $4 per share. This company is running a cross-cut on its 500-foot level, the ledge being 3 to 4 feet in width, and free gold is visible. The walls are well defined. The company has commenced a winze on the 320-foot level and a cross-cut to follow the vein.

The Ward, a Comstock mine, shows a great deal of activity on the San Francisco market at improved prices. The shaft of this mine is down over 1460 feet, and the bottom is in porphyry carrying considerable water. The 800 drift east is now in about 600 feet, and has about 200 feet yet to run to reach the vein under the eastern croppings.

Utah shows considerable falling off from the prices of a week ago. Three feet per day are being added to the depth of the incline in this mine, which is now 544 feet on the slope below the 1350 level.

The Yellow Jacket shaft is averaging 4½ feet per day in additional depth, and is now down 2555 feet. The drift west from the shaft and on the 2500 level is making good progress toward the workings from the old shaft; total length, 85 feet. This stock is fairly maintained.

The *Commercial Herald* says of the market: "A very marked degree of activity manifested itself the past week in the mining stock market, the Bodie mines having come to the front in full force, and large blocks were sold with great rapidity at advancing prices. A very fair disposition to supply the demand was shown all round, the north end mines of the Comstock participating largely, most of them at enhanced rates. The dealers show considerable timidity, and seem to be afraid to hold for a 'boom;' for as soon as a comparatively fair rise is apparently inaugurated, the unloading seems to be too generous to support the prices, and the upward movement receives a check. A good concentration, and a plausible if not reasonable ore-find, is the only good combination that will produce a booming market, and with these conditions in harmony the coin is sure to come forth for investment. There is plenty of coin here, but just now, owing to the dullness in business and the general stoppage of improvements, it hides, and is not disposed to take any risks, even not caring to make any interest; but should the prospects in the mining share market only appear to be good and safe for a speculation, it will flow out without any consideration whatever as to the security, looking only to the speedy profit that will, as they believe, surely follow. In other words, the market can not be divested of its speculative character, and the idle capital and low interest now obtainable will carry a large amount into this channel. The increased interest manifested in New York will largely add to this feeling, and in all probability we shall have a very active market within the next ninety days. The Sutro Tunnel drain is being rapidly carried forward, and before this date next month we may look for some of the good results it is expected to accomplish."

ASSESSMENTS, with dates when delinquent:
Barcelona, 20c., June 23d; Sigourney, 5c., June 21st; McClinton, 25c., June 20th; Occidental Cons. Gravel, 7c., June 23d; Crown Point, $1; Utah Con., $2.

NEW INCORPORATIONS.

We note the recent organization of the following companies in addition to those announced in our issue of May 3d:

American Pulverized Fuel Co.	Col.	....	$1,000,000
Chicago and Middle Park Prosp. Co.	"	....	100,000
Colo. Con. Tunnel and Mining Co.	"	....	5,000,000
Evening Star Mining Co.	"	....	500,000
French Smelting Co.	"	....	60,000
Grand Lake Town M. and M. Co.	"	....	15,000
Iowa Mining and Smelting Co	"	....	.....
Little Pittsburg Con	"	....	20,000,000
May Flower Con. G. and S. Mining Co.	"	....	1,000,000
Mexico and San Juan Mining Co.	"	....	50,000
Mexico and Yellow Mt. Mining Co.	"	....	20,000
Rocky Mt Milling Co.	"	....	.....
St. Joseph Mining and Smelting Co.	"	....	50,000
Western Union Mining Co.	"	....	50,000
Bristol G. and S. Mining Co.	Cal	....	10,000,000
Chrysolite Mining Co.	"	....	6,500,000
Faulk G. and S. Mining Co.	"	....	5,000,000
Gordon Creek Mining Co.	"	....	10,000,000
Hermit G. and S. Mining Co.	"	....	6,000,000
Knight of Malta Mining Co.	"	....	5,000,000
Leota Cons. Mining Co.	"	....	20,000,000
Nelson G. and S. Mining Co.	"	....	10,000,000
Overton G. and S. Mining Co.	"	....	10,000,000
Pine Log Gold Mining Co.	"	....	600,000
Roche Rock Mining Co.	"	....	500,000
Silver Brick Cons. Mining Co.	"	....	10,000,000
Vortex Mining Co.	"	...	6,000,000
Candelaria Water Co	Nev	....	3,000,000
Hercules Mining Co.	"	....	... .
Northwestern Mining Co.	"	....	.... ..
Ophir Cons Mining Co.	"	....	10,000,000
Silver Bill Mining Co.	"	....	100,000
Union Exchequer Mining Co.	"	....	5,000,000
Wells Fargo Mining Co.	"	....	10,000,000
Fairview Mining Co.	Ariz	....	1,200,000
Carrie Steele Mining Co.	Utah	....	10,000,000
Sophia Cons. Mining Co.	Dakota	....	10,000,000
Florida Hill Mining Co.	Idaho	....	1,000,000
Douglass Copper Co.	Maine	...	500,000

April Bullion Product of Producing Mines.—The *Bulletin* reports the following output of those mines reporting their production during the month of April: "The list of gold claims reported for April is the largest yet made, but some heretofore reporting have dropped out. We had to estimate the product of the Bodie mine for February and March, but have seen no data on which to make an estimate for April, and have, therefore, omitted the mine from the list. We are not informed that it produced a dollar in April. Other mines in the same district have recently begun to turn out bullion, two of them reporting for the first time under their present management. The Bechtel turned out a small amount of bullion last year, but the amount given for April is the first under the Bechtel Consolidated. The amount for the Excelsior Gravel is only a partial report, as there was no general clean-up for April. The Secretary of the Caledonia & Golden Terra was obliged to estimate the product in part, owing to the absence of returns. The yield of the Homestake is from a run of twenty days. The Gold Stripe & Stewart mine sent no returns for April. The Father de Smet mine, of Dakota, is understood to be producing liberally, but sent no returns. This is also the case with several other gold mines, including the New York Hill, Consolidated Amador, Monarch Gravel, and Keystone Quartz. Nineteen gold mines give a total of $592,800. The largest producers were: The Standard, $102,000 ($6800 in silver); Bulwer Consolidated, $71,900 ($207,042 to date); Milton Gravel, $71,300; North Bloomfield (from January 24th to May 1st), $68,400; Homestake, $52,000; Plumas Eureka, $48,000; and Idaho, $36,900. Fifteen silver mines produced a total of $624,000. The Ontario leads all the other strictly silver mines, having produced $101,700; the Martin White, with $58,300, comes next; then the Northern Belle with $56,500; Manhattan (estimated), $50,000; Hillside, $45,900; Grand Prize, $44,700; Paradise Valley, $50,800. The April product of the Comstock lode was $920,500; California, $487,100; Consolidated Virginia, $340,000; and Ophir, $93,300. This is a small monthly yield for the Mother Lode, though it is larger than it was in January or February, and nearly as large as the March product. Only two mines in the base metal region reported for April, as follows: Eureka Consolidated, $47,700; Tybo Consolidated, $6500. The total gold produced was $1,124,200; silver, $1,259,000; value of lead, $53,500; grand total, $2,437,300. The product of silver last month is $114,000 less than in March. The comparison of the first four months of this year and last shows a decrease of nearly $10,000,000 in the gross yield for the first four months of the year. This is largely due to the diminished production of the bononza mines. It is a noteworthy circumstance that the silver yield of mines reporting last month was $1,100,000 less than for the same month last year, and we had reports from fourteen more mines than in April, 1878.

The comparison with previous years is given in the following:

	1878. Mines.	1878. Product.	1879. Mines.	1879. Product.
January	28	$4,849,800	35	$1,960,900
February	28	4,580,900	32	1,811,900
March	30	4,928,400	35	2,564,300
April	25	4,161,400	30	2,427,300
Totals		$18,120,500		$8,774,400

The Silver City (Arizona) mills and furnaces are now turning out nearly 4000 ounces of silver bullion each week.

Shipments of Ores, etc., from San Francisco.—The *Commercial Herald* reports the following recent shipments from San Francisco: "The Granada via Panama for New York carried of base bullion, 65,624 lbs.; copper cement, 12,150 lbs.; copper and silver ores, 8940 lbs.; silver ore, 7378 lbs.; to Hamburg, silver ore, 2487 lbs.; to St. Nazarine, France, silver ore, 2496 lbs. The ship Canada carried for New York, via Mazatlan, 277 tons iron ore. The Seminole, for New York, has 16 tons copper, 280 tons iron ores, 425 tons Melrose lead.

The Little Pittsburg Consolidated Mine of Leadville, Colo., shipped 600 tons of ore during the week ending June 1st. A sale of 14 tons of ore realized $9000.

The May product of the Caribou Consolidated Mining Co. of Colorado amounted to 24,000 ounces of silver.

The bullion shipments from Silver Reef for the week ending May 24th, aggregated the sum of $25,013.79.

The shipments from the producing mines of the Bodie District from the 1st to the 19th of May was as follows: Standard Company, $66,196.50; Bulwer, $35,452.13; Noonday, $4,786.58; total, $106,435.21. It is stated that the mines of this district have levied $1,080,500 in assessments, and have paid $1,900,000 in dividends.

Bonanza Products.—The Gold Hill *News* reports the fol

lowing as the output of the bonanza mines for the week ending May 24th :

"*Consolidated Virginia Co.* :

	Previous week.	Past week.
Extracted, tons	940	882
Delivered to mills, tons	940	882
Bullion shipment last evening		$70,141.59.

"The bullion product is somewhat behind this month, but there is already in the treasury of the company a surplus more than sufficient to warrant the declaration of the usual dividends on the 7th of June.

"*California* :

	Previous week.	Past week.
Extracted	$1,251	$1,098
Delivered to mills	1,951	1,098
Bullion shipped to date		$117,250.43

"There is a large surplus in the treasury, and there need be no fears about the dividends due next month."

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore, for the week ending the 6th inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.	Par Value.	High'st	Lowest	Closing	Sales: Shares.
American Coal Co.	$25			30	
St.L.,I.M.& S.R.Co..	100	28¼	27	27½	3,825
Spring Mt. Coal Co.	50			50	
*Cambria Iron Co..	50			67	
*Penn.Salt Mf'g Co.	50			75	83
*Westm'land C. Co.	50			53	75
*Buck Mt. Coal Co..	50			40	
*Schuyl. Nav. Co...	50				
†B.&O.RR.Co.1st pf				110	36
†B.&O.RR.Co.2d pf	100			103	10
" " " " com	90	108	106	107½	341
†George's C'k C. Co	100			55	
†S. Clara M'g Co...	100			5	48
†Atlantic Coal Co.	10			50	

BONDS.	Prince'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1891	J. & D.			
" " " " 2d mtge.	1882	M. & S.	105½		$32,000
N.J.C.,1stmtge.new	1890	F. & A.	117	116⅞	12,000
" " " 1st mtge.,con	1899	Q.	94⅛	93½	*247,000
" " " convt	1902	M. & N.	94⅞	94½	*29,000
Lehigh & W. B., con	1890	Q.	90	87½	*450,000
Am. Dock & Imp. 7s		J. & J.	87	76	18,000
St.L.I.M.& S..1st mt	1892	F. & A.	115	114¾	9,000
Ches. & O., 1st mtge	1899	M. & N.			
D & H C Co.,1stm.rg	1884	J. & J.	103½		4,000
" " " " "	1891	J. & J.			
" " " " " m.loan cp	1894	A. & O.			
" " " " " rg.	1894	A. & O.	104½		7,000
" " " " " new mge.					
*L.V.R.,1stm.6s.cp.	1898	J. & D.			
" " " " rg.	1898	J. & D.		113	
" " " 2d m. 7s,rg.	1910	M. & S.	119		1.000
" " " con.m.6s,rg	1823	J. & D.	105		32,000
" " " 6s cp.	1923	J. & D.	105		5,000
*Pa.RR.,1st m.6s,cp	1880	J. & J.	105⅝		1,000
" " g. m., 6s, cp.	1910	J. & J.			
" " " 6s, rg.	1910	A. & O.			
" " con.m.6s,rg.	1905	Q.	109½		15,000
" " " 6s, cp.	1905	J. & D.	109		1,000
" " new loan, 5s			113		100,000
*P.& R. R., 1st m.6s, R. C. 43-44	1880	J. & J.			
P. & R. R., 1st m. 6s, R. C. 48-49	1880	J. & J.			
P.& R. R.,2d m.7s cp	1893	A. & O.			
" " " scrip	1882	J. & J.	70	69⅛	8,595
" " " in.m.7s,cp	1896	J. & D.	71	67	9,000
" " " c.m.7s,cp.	1911	J. & D.	114½	110¾	14,000
" " " 7s. rg.	1911	J. & D.	111½		2,000
" " " cvt.7s,R.C	1893	J. & J.	66		1,000
" " C.& I.Co.,Deb 7s, R. C.	1892	M. & S.			
& R.C.& I. Co., m. 7s, R. C.	'92-3	various			
*L.Nav.Co.,6s,rg.m.	1884	J & Q.	107		100
" " RR., rg. m.	1897	F. & Q.		107½	
" " cvt. co. G. R.	1894	M. & S.	102		2,000
" " " Gold R. C.	1897	J. & D.	103½	102½	18,000
" " con.m.7s,rg.	1911	J. & D.	95	92	15,000
*P.& N.Y.C.,7s,R.C.	1896 / 1906	J. & D.			
*Pa Canal, 6s, cp..	1910	J. & J.		73	
*Schuyl.Nav.,1st m. 6s. rg	1897	M. & Q.			
*Sus.Coal, 6s, rg...	1911	J. & J.	98	97	2,000
†Balt.&O. RR., 6s..	1880	J. & J.		103	
" " " 6s..	1885	A. & O.		103	

Total transactions for the week.. .....$1,034,695

* Assented.

Copper and Silver Stocks.

[Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveler Building, 31 State street.]

BOSTON, Thursday Evening, June 5, 1879.

The market has been rather active during the week, notwithstanding the fact the market on other stocks has been dull and weak, and that Friday and Saturday were holidays.

There is more interest felt in these stocks every day, and a growing desire to invest in good reliable mining property, and discard the illegitimate things under the name of mining investments, which are being thrust upon the market. There is every indication of an advance in these stocks, and any body who will buy some of the small stocks which are floating around, and have patience to hold them a few months, will, without much doubt, realize a profit on them.

Calumet & Hecla is quite firm, having advanced again to 179, and closed at 178¼@179.

Copper Falls is quite strong and in demand, large lots having been taken off the market at from 1⅝@2, and closes 1 15-16@2, and will probably go higher.

Franklin has been quoted at $8 sales, and closes a trifle weak, at 7⅛@8.

Osceola is steady at 14¾@15, and sales at 15.

Pewabic is weak, being offered at 2⅜, and no bid.

Quincy is steady at 14@14¼, and looks like a good purchase.

COAL STOCKS.

NAME OF COMPANY.	Capital Stock.	Shares. No.	Shares. Par Val.	Last Dividend. Mo.	Last Dividend. Y.	Last Dividend. A't.	Rate per Ann.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted, so much per share. May 31. H.	May 31. L.	June 2. H.	June 2. L.	June 3 H.	June 3 L.	June 4. H.	June 4. L.	June 5. H.	June 5. L.	June 6. H.	June 6. L.	SALES.
	$		$				Per c'nt													
Consol. Coal.	10,250,000	102,500	100	Jan.	77	2½	....									20	....	....	....	100
Del. & H. C..	20,000,000	200,000	100	Aug	76	4	9	50⅜	49⅛	51⅜	49¾	50¾	49¼	49⅝	48¾	50	49½	49⅞	46¾	19,429
D., L.& W. RR.	26,000,000	524,000	50	July	76	2½	5	60¼	58¾	60⅛	59	59⅛	58⅜	59½	58½	59½	59¼	59⅞	58⅝	129,412
Lehigh C.& N	10,148,350	208,971	50	Nov	76	1½	5½	25⅜	24⅜	25⅝	24½	24⅞	24	25	24½	24⅞	24½	....	....	26,778
Leh. V. R. R	27,228,855	540,858	50	Mch	79	1	4	40	39⅜	39⅞	39⅛	39½	39⅛	39½	39⅛	39½	39¼	39¾	39¼	2,055
Maryl'd Coal	4,400,000	44,000	100	Jan.	'76	1½	1½	....	....	....	....	....	....	....	....	....	....	....	....	....
N. J. C. R. R.	20,600,000	206,000	100	Apr	76	2½	2½	52	50⅜	52⅜	51½	52¼	50⅝	52⅜	51¼	52¼	51⅞	52⅜	51¾	81,774
Penn. Coal...	5,000,000	100,000	50	May	78	3	....	....	....	....	....	....	....	....	....	142	....	....	....	70
Penn. R. R...	68,870,200	1,337,404	50	May	79	2	8	37⅝	37⅜	37⅝	36⅞	37¼	37	37⅜	37	37¼	37⅛	37¼	37	14,059
Ph. & R. R. R	34,278,175	685,563	50	Jan	76	+2½	10	20⅜	20	20⅝	20¼	20¼	20	20	19½	19¾	19⅝	20⅜	20	44,774

The Delaware and Hudson Canal Co. has paid in dividends to date $38,821,104. and the Philadelphia and Reading $43,012

Total Sales.. .... 318,451.

Ridge has suddenly fallen off and become very quiet, the market being about 1¾@1⅞, though the sellers appear rather timid about offering their stock, for fear of depressing the market.

Duncan is quiet at 4¼@4⅜, and sales at 4⅜.

International is steady at 55@60c., and sales at 60c.

Silver Islet has fallen off again, and closes steady at 38 @39.

Sullivan still continues to look favorable, but, for some unknown reason, there is not much demand for the stock, and it closes weak, being offered at 9, and no bid.

Rescue has sold at 1⅛, 200 shares, and we should not be surprised if there should be an active market in it.

Malachite is steady, at 15@20c., and sales at 17c.

Altar is quiet, being offered at $1, and few bidders.

Commonwealth is quiet at 30@40c., and is in danger of an assessment.

Coal Stocks.

NEW YORK, Friday Evening, June 6, 1879.

The sales for the week have been large, and the market in the beginning of the week was very strong. Delaware, Lackawanna & Western, selling at 60½ on the 2d, fell to 58⅝ on the 3d, closing to-night at 58¾, with sales of 129,412 shares. Delaware & Hudson Canal advanced to 51⅝ on the 2d, and gradually declined to 46¾, which is the closing price. New Jersey Central has fluctuated evenly between 52¾ and 50⅝, closing at 51⅛.

Philadelphia & Reading has been the feature of the Philadelphia market, and much speculation is going on in regard to the proposed new leases, and the doubts entertained by many as to the advantage to be gained from them keep the stock from going higher. 44,774 shares have been the transactions for the week, at from 20⅝ to 19½.

The road will pay its employés their April and May wages in wages certificates bearing 6 per cent interest, payable in October and November, receivable any time at their full value. The total amount of the issue will be $700,000. There is now outstanding on previous issues $67,970. The June and July payments for interest and rentals of the Philadelphia & Reading Railroad Company, and the Philadelphia & Reading Coal and Iron Company, amount in the aggregate to $2,104,739.70. The gross receipts of the two companies for June and July are expected to be considerably over four and a half millions of dollars, and, with the relief afforded by the proposed issue of wages certificates, the July payments for interest and rental will be met without any difficulty.

Lehigh Navigation, next on the list, has sold to the extent of 26,778 shares between 25⅝ and 24. The Philadelphia *Ledger* of the 4th inst. says :

"We have inquired about the rumors of negotiations by the Lehigh Coal and Navigation Co., and learn that they have sold $750,000 of their consolidated 7 per cent bonds to a syndicate of Philadelphia, New York, and Boston bankers, and have with the proceeds retired one half of their floating debt. It is expected that sales will be made of such further amount as will provide means to retire the remainder of their temporary loans. The improved financial condition of the company and the favorable results of their business so far this year, as compared with last year, have induced large purchases of their stock, some of which are reported to be for New York account."

Pennsylvania RR. stock has been very quiet, with sales of only 14,059 shares, at 37⅝@36⅞. The annual meeting of the company was held at Pittsburg on the 2d, and the leases of the Ashtabula & Pittsburg, Northwestern Ohio & Indianapolis, and Vincennes railroads were unanimously ratified.

Lehigh Valley received very little attention during the week, with a tendency to decline.

Mr. Charles Hartshorn, Vice-President of the Lehigh Valley Railroad Company; Mr. Robert H. Sayre, superintendent of the same company ; and Mr. E. P. Wilbur, a trustee under the will of the late Asa Packer, are all named in connection with the office of President of that company, made vacant by the death of Judge Packer. The first meeting of the directors of the company since the office became vacant will be held on Tuesday of next week, the 10th inst.

A story some time ago circulated, that the engineer corps of the Lehigh & Easton Railroad are locating a new line from White Haven to Stroudsburg, is again revived.

AUCTION SALES :

Missouri Wrecking Co.—80 shares.

Western River Improvement and Wrecking Co.—160 shares.

Durango Silver Mines—250 shares ; the lot for $9.

New Jersey Zinc Co.—36 shares, at $41.

Coupons and interest on the bonds of the following companies fall due during the present month :

Delaware & Lackawanna RR. Co—Conv. bonds ; coupons.

Morris & Essex RR. Co.—Cons. mortgage ; coupons paid by Delaware, Lackawanna & Western RR. Co.

Pennsylvania Anthracite Coal Co.—Coupons.

Rockland Nickel Mining Co.—Coupons.

St. Louis & Iron Mountain RR. Co.—Arkansas Branch gold bonds ; coupons.

Syracuse, Binghamton & New York RR Co.—Coupons paid by Delaware, Lackawanna & Western RR. Co.

Tennessee Coal & RR. Co.—Coupons.

Belvidere Delaware RR. Co.—1st-mortgage loan ; coupons.

Camden & Amboy RR. Co.—Coupons paid by Pennsylvania RR. Co.

Dunbar Iron Co.—Coupons.

Lehigh Coal & Navigation Co.—6 per cent gold loan ; coupons ; cons. mortgage loans and conv. loan 6 per cent, interest.

Lehigh Valley RR Co.—1st and cons. mortgage bonds ; coupons.

Pennsylvania & New York Canal Co—7 per cent bonds ; coupons paid by Lehigh Valley RR. Co.

Pennsylvania RR. Co.—Cons. mortgage, con. and reg. bonds ; coupons and interest.

Philadelphia & Reading RR Co.—Cons. mortgage loan ; coupons.

Gas Stocks.

NEW YORK, Friday Evening, June 6, 1879.

The market altogether is very quiet. New York stocks are steady, and Brooklyn a little lower.

The Globe Gas-Light Co. (gasoline) has commenced operations in Boston.

The Citizens' Gas Co., of Chattanooga, Tenn., has decided to rebuild the old Mutual Gas-Light Company's works, to be completed by November 1st. They propose to furnish gas at $2 per thousand.

Boston streets are to be lighted 15c. less per thousand than heretofore. There are to be 25 per cent less burners used, and the saving will be $37,000. The price for private consumers has been reduced from $2.25 per thousand to $2 after April 1st.

The Providence (R. I.) City Council have voted to change 1000 gas street lamps to gasoline.

A convention of the gas engineers of New York State will be held in Rochester on the 21st of August.

Price of gas in Youngstown, O., has been reduced to $2 per 1000 ft. Consumers of over 5000 feet will be charged only $1.75 per thousand.

Coupons on the bonds of the following companies are due :

Citizens' Gas-Light Co., of Newark, N. J.—Coupons.

Metropolitan Gas-Light Co.—Coupons.

Milwaukee (Wis.) Gas-Light Co.—Coupons.

People's Gas-Light and Coke Co. of Chicago.—Coupons.

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	DIVIDENDS. Am. of last.	DIVIDENDS. Date of last.	QUOTATIONS Bid.	QUOTATIONS As'd.
	$		P. ct.				
Mutual, N. Y....	5,000,000	$100	6	1½	Apr., '79	70	75
" Bonds...	90,000	1,000	6	3½	Feb., '79	101	104
N. York "	4,000,000	.....	8	4	May, '79	97	99
Metrop. "	2,500,000	100	10	5	Feb., '79	122	127
" Certfs...	1,000,000	.....	7	3½	Feb., '79	101	104
Harlem "	1,850,000	50	6	3	Feb., '78	40	50
Manhat. "	4,000,000	50	.....‡	5	June, '79	175	185
Brooklyn, Bkln.	2,000,000	50	15	5	May, '79	120	127
Nassau	1,000,000	25	.....‡	3	Jan., '79	55	65
" Certfs...	700,000	1,000	7	3½	May, '79	80	87
People's.....	1,000,000	10	....‡	3½	Jan., '76	18	22
" Certfs....	300,000	1,000	7	3½	Jan., '79	70	75
" Bonds....	300,000	.....	7	3½	May, '79	90	96¼
Metrop. "	1,000,000	100	5	2½	May, '79	45	55
W'msb'g "	1,000,000	50	8	1½	Apr., '79	70	80
" Certfs...	1,000,000	.....	7	3½	Jan., '79	85	92
Citizens'.....	1,200,000	20	....‡	3	Jan., '79	55	65
" Bonds...	315,000	1,000	.....	3½	Apr., '79	95	100
J. C., N. J.....	750,000	20	10	7½	Jan., '79	135	145
Municipal, N. Y.	2,000,000	100	12	3	June, '79	115	120
" Bonds..	750,000	100	7	3	May, '79	104	106
.....	.....	.....	.....	.....	.....	.....	.....

FINANCIAL.

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DIVIDENDS.

OFFICE OF THE PLUMAS NATIONAL QUARTZ MINING COMPANY,
No. 54 BROAD STREET, NEW YORK.
DIVIDEND No. 17.
A dividend of 8 cents per share on the capital stock of the company has this day been declared for month of May, payable on 20th instant. Transfer-books close on the 13th and re-open on the 23d instant. By order of the Board.
Annual meeting of the stockholders will be held on the 28th inst., at Greenville, California.
HENRY J. ROGERS, Transfer Secretary.
June 3, 1879.

OFFICE OF THE ONTARIO SILVER MINING CO.,
31 BROAD STREET, NEW YORK, June 5, 1879.
DIVIDEND NUMBER 44.—THE REGULAR monthly dividend of FIFTY CENTS per share has been declared for May, payable at the office of the transfer agents, Wells, Fargo & Co., 65 Broadway, on the 16th inst. Transfer-books close on the 10th inst.
H. B. PARSONS,
Assistant Secretary.

NOTICE.

RICHARD P. ROTHWELL, MINING ENGINEER and Managing Editor of the ENGINEERING AND MINING JOURNAL, is now making an extended tour through the Mining Regions of the West, including Montana. Until about the 15th of June, his address will be the Walker House, Salt Lake City; but parties desiring his professional services can obtain information at this office, and be put in communication with him by telegraph at any time.

GEORGE W. MAYNARD, MINING AND METALLURGICAL EXPERT, late Professor of Mining and Metallurgy in the Rensselaer Polytechnic Institute, offers his services for the examination of metalliferous mining properties and metallurgical processes. Mr. Maynard has had an extensive experience in Colorado and Europe. Address 24 Cliff Street, New York.

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